



Warburton Mountain Bike Destination: Native vegetation offset strategy

Prepared for AECOM & Yarra Ranges Council

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Contents

1	Introduction	1
1.1	Project background	1
1.2	Strategy objectives.....	1
1.3	Project native vegetation impacts and offset requirements	2
1.4	Offset requirements.....	2
1.4.1	Commonwealth offsets.....	2
1.4.2	State offsets.....	2
1.4.3	Species offset summaries.....	3
2	Offset options investigation.....	7
2.1	Minimising impacts to reduce species offsets.....	7
2.2	Credit register and broker searches for private land offset sites	9
2.3	Yarra Ranges Council existing offset sites.....	9
2.4	Offset site establishment desktop analysis	9
2.4.1	Analysis and site review	9
2.4.2	Summary of results and options	25
2.4.3	Land manager/owner consultation	25
3	Offset site eligibility and management.....	26
4	Next steps	29
4.1	Key considerations	29
4.2	Site assessment and documentation process	29
4.3	Conclusion.....	30
5	References	31
Appendix 1	Project impacts – DELWP NVRs for scenario 1 and scenario 2	32
Appendix 2	Potential offset site Ensym outputs.....	59

Tables

Table 1	Summary of species offset characteristics.....	7
Table 2	Summary of Ensym scenario test outcomes for species habitat units at 11 potential offset sites (*SHU – species habitat unit)	12
Table 3	Review of 15 potential offset sites (patches of combined modelled species habitat) on Crown and private land, ***excludes other public land tenures such as road reserves deemed unsuitable for offsets.....	13
Table 4	Assessment against offset eligibility criteria	26

Figures

Figure 1	Project area and co-located DELWP modelled habitat.....	11
Figure 2	Detailed mapping of potential 11 offset sites.....	16

1 Introduction

1.1 Project background

Biosis Pty Ltd was commissioned by AECOM and Yarra Ranges Council to prepare an offset strategy for native vegetation removal associated with the proposed Warburton Mountain Bike Destination (WMBD, 'the project'), centred around Warburton, approximately 70 kilometres north-east of Melbourne, Victoria.

This offset strategy aims to demonstrate how the 'no net loss' objective of the *Guidelines for the removal, destruction or lopping of native vegetation* (the 'Guidelines', DELWP 2017a) can be achieved for the project clearing requirements for trail development and associated infrastructure. This offset strategy supports the Biodiversity Assessment Technical Report prepared for the project Environment Effects Statement (EES) (Biosis 2021).

The EES scoping requirements for biodiversity impacts state the EES documentation should:

- Describe and evaluate proposed measures to manage the residual effects of the project on biodiversity values (including matters of national environmental significance) and prepare an offset strategy and offset management plan that sets out and includes evidence of the offsets that can be secured or are proposed to satisfy Commonwealth and Victorian offset policy or guideline requirements.
- Describe how the offset/s will be secured, managed and monitored, including management actions, responsibility, timing, performance measures and the specific environmental outcomes to be achieved.

Through consultation with the EES technical reference group, these requirements have been refined to exclude the requirement for a detailed offset management plan as part of the EES documentation to be exhibited, but such a plan will be required for all offset sites prior to commencement of any vegetation clearance for the project. Therefore, offsets are being addressed at a strategic level at this stage of the project and this strategy reflects that intent.

1.2 Strategy objectives

The broad objective of this strategy is to provide evidence that viable biodiversity offset options exist to achieve a no net loss outcome for the project. Specifically, the objectives of this strategy are to:

- Provide a stand-alone offset strategy as part of the EES documentation.
- Develop an offset strategy to a point where the key government agency stakeholders are comfortable with the proposed offset approach.
- Clearly articulate how the offsets are proposed to be secured (market, Crown land, alternative arrangements or a combination) and how the species habitat unit gains can reasonably be achieved.
- Outline the eligibility requirements, management obligations and gain scenarios for proposed offset sites, so that the relevant land managers clearly understand the potential commitments (in terms of availability, feasibility of management requirements and funding arrangements).
- Outline approval and security requirements for each offset scenario.
- Outline consultation conducted with key stakeholders to agree on the aspects above.

1.3 Project native vegetation impacts and offset requirements

Construction of the trail network and supporting infrastructure has two possible design scenarios (scenario 1 and scenario 2) to be delivered across two project stages that are currently subject to an EES and future regulatory approvals processes. Native vegetation removal will be concentrated on understorey impacts only in a variable width trail construction and operational footprint as described in Biosis (2021).

In summary, scenario 1 with trail 1 will impact up to 37.047 hectares of understorey vegetation. Scenario 2 with the alternative trail alignments 45, 46 and 47 will impact 35.754 hectares of understorey vegetation. Both scenarios are on the detailed assessment pathway according to the *Guidelines for the removal, destruction or lopping of native vegetation*. Based on advice and recommendations from the project arborist no large trees have been included in patch vegetation removal as sensitive construction measures are considered unlikely to cause tree decline where tree protection zone (TPZ) and structural root zone (SRZ) encroachment occurs.

Detailed discussion on the project's other biodiversity impacts, mitigation measures and assessment against relevant environmental legislation is provided in Biosis (2021).

1.4 Offset requirements

1.4.1 Commonwealth offsets

Significant impact assessments have been undertaken for all relevant *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) listed threatened species according to Commonwealth guidelines. These assessments have concluded that either of the project development scenarios is unlikely to result in a significant impact on nationally threatened mammals, birds or plants. On this basis, Commonwealth offsets are not considered necessary for the project, have not been calculated and are not subject to an offset strategy requirement.

1.4.2 State offsets

State offsets arise through the removal of native vegetation, which sometimes corresponds with modelled habitat for rare or threatened flora and fauna under the Department of Environment, Land, Water and Planning (DELWP) Advisory lists. State biodiversity offsets have been calculated in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation*, which is an incorporated document within the Victoria Planning Provisions under Clause 52.17. Losses and gains are measured in general or species habitat units.

Native Vegetation Removal Reports were obtained for two separate clearing scenarios. Scenario 1 includes trail 1 and scenario 2 includes the alternative trail alignments 45, 46 and 47. The project is also proposed to be constructed across two stages and a staged offset scenario has also been calculated for the two different trail development scenarios. The results of the species-general offset test indicate that species offsets will be required for both development scenarios. No general offsets or large tree offsets have been triggered. Native vegetation removal reports with detailed offset requirements are provided in Appendix 1.

In order to ensure the 'no net loss' objective of the *Guidelines for the removal, destruction or lopping of native vegetation* can be achieved for the project, the project (encompassing the two stages) must secure the following offsets:

- For project scenario 1 with trail 1, 263.637 species habitat units are required for 13 species:
 - 21.107 Leadbeater's Possum *Gymnobelideus leadbeateri*
 - 20.684 Smoky Mouse *Pseudomys fumeus*

- 19.073 Tall Astelia *Astelia australiana*
 - 25.214 Brickmaker's Sedge *Gahnia grandis*
 - 26.076 Nunniong Everlasting *Ozothamnus rogersianus*
 - 20.620 Jungle Bristle-fern *Cephalomanes caudatum*
 - 19.885 Tree Geebung *Persoonia arborea*
 - 26.023 Long Pink-bells *Tetralochea stenocarpa*
 - 15.210 Fairy Lanterns *Thysanotus rodwayi*
 - 9.342 Mountain Bird-orchid *Chiloglottis jeansii*
 - 25.858 Powelltown Correa *Correa reflexa* var. *lobata*
 - 23.128 Toothed Leionema *Leionema bilobum* subsp. *serrulatum*
 - 11.417 White Star-bush *Asterolasia asteriscophora* subsp. *albiflora*.
- For project scenario 2 with alternative trail alignments, 240.087 species habitat units are required for 13 species:
 - 19.410 Smoky Mouse
 - 18.027 Tall Astelia
 - 24.584 Brickmaker's Sedge
 - 25.342 Nunniong Everlasting
 - 19.387 Jungle Bristle-fern
 - 19.182 Tree Geebung
 - 25.345 Long Pink-bells
 - 13.528 Fairy Lanterns
 - 8.830 Mountain Bird-orchid
 - 25.125 Powelltown Correa
 - 22.394 Toothed Leionema
 - 10.430 White Star-bush
 - 8.503 Wavy Fork-moss *Dicranoloma platycaulon*.

1.4.3 Species offset summaries

Summaries of the 14 species habitat units triggered across both project development scenarios are provided below as they relate to the project area and DELWP modelled habitat in Victoria. Co-located DELWP modelled habitat for these species is shown in Figure 1.

Leadbeater's Possum is endemic to Victoria, where it has a patchy distribution throughout the Central Highlands in montane forest and sub-alpine woodland above 400 metres elevation (TSSC 2019). An outlying lowland population also occurs near Yellingbo, in lowland floodplain forest (Smales 1994). Most Leadbeater's Possum populations occur in montane ash forests dominated by Mountain Ash (*Eucalyptus regnans*), Alpine Ash (*E. delegatensis*) or Shining Gum (*E. nitens*). They are listed as critically endangered under the EPBC Act and

Flora and Fauna Guarantee Act 1988 (FFG Act). Key habitat features within the project area for the species include hollow-bearing trees, artificial nest boxes and montane thickets and rainforest vegetation with high stem densities of mid-storey species. Leadbeater's Possum is known to occur within the project area and broader local area. The DELWP habitat importance model (HIM) for this species stretches from Erica in the south-east to Lake Eildon in the north-east.

Smoky Mouse is a small native rodent endemic to mainland south-eastern Australia. In Victoria, the Smoky Mouse is extinct in two out of four known locations, but can still be found in the Grampians, and in fragmented areas within the Central Highlands. They are listed as endangered under the EPBC Act and FFG Act. The national recovery plan for Smoky Mouse describes any vegetation with a diversity of heath and bush-pea species, combined with potential shelter sites in the form of woody debris or rocks as being potential habitat within the species range (Menkhorst and Broome 2006). Given these broad habitat requirements and the cryptic nature of this species, it could be reasonably assumed that if a population of the species was present within or adjacent to the trail alignment, the population would utilise the extensive areas of available habitat adjacent to the development (e.g. Shrubby Foothill Forest dominated by bush peas). Approximately 12 hectares of Shrubby Foothill Forest understorey will be disturbed by the project and not all of this area is dominated by suitable heath and bush pea species that provides potential habitat for Smoky Mouse. The DELWP HIM for this species stretches from near Healesville in the south-west to Mount Buffalo in the north-east with outlying modelled habitat near Buchan.

Tall Astelia is a robust, tufted plant to 1.8 metres tall that forms colonies. It is rare and confined to a few gully-heads and stream margins in the Powelltown-Beenak district. Plants form large colonies and are found on humus-rich, waterlogged soils in *Nothofagus* and *Eucalyptus regnans* forests (VicFlora 2021). It is listed as vulnerable under the EPBC Act and critically endangered under FFG Act. There are no records of the species within the project area and it was not recorded during the detailed field surveys. Although this species has modelled habitat with suitable rainforest habitat present in the moist soils of gully heads and along stream margins in association with rainforest vegetation. As the species is highly distinctive and can be detected year-round, it is highly likely that any individuals within the assessment corridor would have been detected during the ecological surveys conducted between 2017 and 2021 for the project. The DELWP HIM for this species is restricted to an area between Healesville, Noojee and Marysville.

Brickmaker's Sedge is a robust tussock-forming perennial. Found in damp shaded sites beside streams and swamps, but recorded in Victoria only from Gembrook-Beenak area and the northern part of Wilsons Promontory (VicFlora 2021). It is listed as endangered under the FFG Act. This species has a low likelihood of occurring within the project area, with suitable habitat only present in some sections of the project area. The DELWP HIM for this species is restricted to an area between Healesville, Warragul and Marysville.

Nunniong Everlasting is an erect shrub to 2.5 metres high. The species is likely to occur in moist foothill forests, and subalpine woodlands or shrublands. Known from only four geographically and ecologically disjunct areas of moist foothill forests of the western Otway Range and East Warburton area, and subalpine woodlands or shrublands of Mount Wellington and the Nunniong Plateau (VicFlora 2021). It is listed as endangered under the FFG Act. There is suitable habitat present in small sections of the project area. In the Yarra Ranges the species occurs in areas of Montane Damp Forest (EVC 38) dominated by Narrow-leaf Peppermint *Eucalyptus radiata* (YRSC 2021). The DELWP HIM for this species is disjunct and covers areas around Warburton, the Avon Wilderness, Alpine National Park and the headwaters of the Buchan River.

Jungle Bristle-fern is a small epiphytic fern that is rare, found in rainforests in far-East Gippsland, the Beenak area and Wilsons Promontory. It grows on the trunks of tree-ferns, particularly *Cyathea australis* (VicFlora 2021). It is listed as endangered under the FFG Act, and although not recorded by the detailed flora assessments, three recent records between 2012 and 2015 within the project area. The DELWP HIM for this species is disjunct and covers areas around Warburton, Orbost and Croajingolong National Park.

Tree Geebung is a large shrub or small tree to 10 metres tall. It is endemic to the Central Highlands of Victoria and has distinctive foliage, flowers and fruit that readily identify it year-round. It is confined to wet montane forests of the Yarra, Thomson, Latrobe and Bunyip River watersheds and sometimes locally common and is often associated with *Nothofagus cunninghamii* closed-forest margins or *Eucalypt*-dominated tall open-forests. It is listed as endangered under the FFG Act. This species was recorded numerous times in the project area, outside of the assessment corridor, by Practical Ecology (2019) and Biosis (2021). The DELWP HIM for this species stretches from Erica in the east through to Kinglake National Park in the west.

Long Pink-bells is a slender shrub with trailing to ascending branches to c. 1.5 metres long and is endemic to Victoria being localised near Healesville and Gembrook, on French Island and in the Pyrete Ranges north of Melton. It grows in open-forests and tall, mountain forests (VicFlora 2021). It is listed as endangered under the FFG Act. Long Pink-bells was recorded by Practical Ecology (2019) along trails 27, 32, 33 and 35 in the project area. The DELWP HIM for this species stretches from Tanjil Bren in the east, to Kinglake National Park in the west and Tonimbuk in the south.

Fairy Lanterns is small saprophytic plant, 5 to 30 millimetre tall that is apparently restricted to damp humus and leaf-litter in deeply shaded tall forests and fern gullies (VicFlora 2021). The vegetative part of the plant is entirely subterranean and colourless. The species' small, orange and red, fleshy flowers appear from spring to autumn, barely penetrate the soil surface and are typically covered by leaf-litter (Roberts et al. 2003). A very localised, concealed plant which is very rarely seen. Recorded from the mountains around Melbourne, Tarra Valley National Park, and near Portland where now presumed extinct. It is listed as endangered under the FFG Act. This extremely cryptic species is unlikely to be detected without an extensive survey effort in suitable habitat, which occurs throughout much of the assessment corridor and is therefore assumed to be present within the assessment corridor. The DELWP HIM for this species is restricted to an area between Powelltown, Healesville and Kinglake National Park.

Mountain Bird-orchid is a 4 to 7 centimetre tall orchid that flowers from November to January. This species is localised in mountainous regions east of Melbourne (e.g. Dandenong Ranges, Toorongo, Baw Baw National Park) where it is sometimes locally common in fern gullies and wet sclerophyll forests (VicFlora 2021). It is listed as vulnerable under the FFG Act. It was recorded by Biosis during November 2020 field investigations near Mount Victoria between trails 45 and 46 in one location and in two locations along trail 51 below Burns Road in Yarra State Forest. The species may be more widespread in Damp Forest, Wet Forest and Shrubby Foothill Forest given the discrete locations where this species has been recorded and other suitable habitats. The DELWP HIM for this species is restricted to an area between Erica, Healesville and Mount Dandenong.

Powelltown Correa is a shrub to 2 metres tall. It is endemic to Victoria, where locally common in moist, often heathy, open-forest from the Dandenong Ranges to near Powelltown, with an isolated occurrence in Cranbourne (VicFlora, 2021). It is listed as endangered under the FFG Act. The DELWP HIM for this species is restricted to an area between Powelltown, Healesville and Kinglake National Park. The DELWP HIM for this species stretches from Noojee in the east, to Kinglake National Park in the west and Pakenham in the south.

Toothed Leionema is a dense shrub or rarely a small tree to 4 metres tall. It grows in wet sclerophyll forests of western Gippsland, between Warburton and the Baw Baws, and in the Strzelecki Range often found on loamy granitic soils in mountain forests. It is not listed under the FFG Act but is considered as rare on DELWP's Advisory list. It was recorded in the project area and assessment corridor by Biosis during November 2020 field investigations as being widespread in Wet Forest near Mount Bride. The DELWP HIM for this sub-species stretches from the Strzelecki Ranges in the south-east through to Kinglake National Park in the north-west.

White Star-bush is a slender, erect shrub to two metres high. It is restricted to the Emerald–Monbulk area of the southern Dandenong Ranges where growing in damp sclerophyll forest. It is known from scattered dry woodlands, shrublands and moist to wet heathy open-forests. It is listed as critically endangered under the FFG Act. This species was not recorded during detailed flora assessments and it is unlikely to occur within the

project area, as Warburton is well outside of the species' range and the species is extremely geologically restricted (VicFlora 2021). The DELWP HIM for this species is restricted to an area between Neerim South and the Dandenong Ranges.

Wavy Fork-moss is known from the Yarra and Strzelecki Ranges in *Nothofagus cunninghamii* dominated cool-temperate rainforest (VicFlora 2021). Grows primarily as an epiphyte on rainforest or wet forest trees. It was not recorded during field surveys, although it is highly likely to occur within the project area. It is listed as endangered under the FFG Act. The DELWP HIM for this species is restricted to an area between Mount Baw Baw, Taggerty and Healesville.

2 Offset options investigation

Yarra Ranges Council has pursued a number of options to satisfy the project's SHU offset requirements. These are outlined below.

2.1 Minimising impacts to reduce species offsets

Reducing the project's offsets requirements has been achieved as much as is practical by reducing the trail construction width and required vegetation removal through committing to hand building in areas of the Yarra Ranges National Park and more remote and intact parts of the Yarra State Forest. Existing tracks and trails have also been utilised for several MTB trail alignments and for trailheads and other project infrastructure to minimise vegetation removal.

It was considered unviable to reduce the trail network to such an extent that impacts would fall below the 0.005 proportional impact threshold for the species that have triggered species habitat units offsets. These species are mapped extensively across the project area and avoidance of modelled habitat is not viable if the funded project objective to develop around 180 kilometres of trail is to be achieved. Many other rare or threatened species also have DELWP modelled habitat in the project area and changing alignments would likely trigger species offsets for additional species.

Table 1 below summarised the proportional impact on the 14 species that have triggered SHU offsets across both project scenarios. The extent of their modelled habitat is provided in the two scenario NVRs in Appendix 1.

Table 1 Summary of species offset characteristics

Species	SCENARIO 1 Proportional impact on mapped habitat	SCENARIO 2 Proportional impact on mapped habitat	Habitat group	Likelihood of actually occurring in project area	Comments on mapped habitat
Leadbeater's Possum <i>Gymnobelideus leadbeateri</i>	0.0051	0.0049*	Dispersed	High/recorded	Habitat mapped very extensively across the project area. Habitat is not mapped in the valley.
Smoky Mouse <i>Pseudomys fumeus</i>	0.0058	0.0057	Dispersed	Medium	Habitat mapped very extensively across the project area. Habitat is not mapped in the valley.
Tall Astelia <i>Astelia australiana</i>	0.0065	0.0060	Dispersed	Medium	Mapped on the lower sections of Mount Dona Buang and habitat across the Yarra State Forest.
Brickmaker's Sedg <i>Gahnia grandis</i>	0.0119	0.0113	Dispersed	Low	Habitat mapped very extensively across the project area.

Species	SCENARIO 1 Proportional impact on mapped habitat	SCENARIO 2 Proportional impact on mapped habitat	Habitat group	Likelihood of actually occurring in project area	Comments on mapped habitat
Nunniong Everlasting <i>Ozothamnus rogersianus</i>	0.0069	0.0067	Dispersed	Medium	Habitat mapped very extensively across the project area.
Jungle Bristle-fern <i>Abrodictyum caudatus</i>	0.0055	0.0050	Dispersed	High	Scattered mapping on lower to upper slopes of Mount Donna Buang and Yarra State Forest. This species is not mapped in the valley.
Tree Geebung <i>Persoonia arborea</i>	0.0052	0.0050	Dispersed	High/recorded	Habitat is across most of the study area from the lower slopes to upper slopes. Habitat is not mapped in the valley.
Long Pink-bells <i>Tetratheca stenocarpa</i>	0.0108	0.0103	Dispersed	High/recorded	Habitat is mapped very extensively across the project area.
Fairy Lanterns <i>Thismia rodwayi</i>	0.0135	0.0113	Dispersed	Medium	Habitat is mapped very extensively across the project area.
Mountain Bird-orchid <i>Chiloglottis jeanesii</i>	0.0106	0.0097	Dispersed	High/recorded	Habitat is scattered, restricted to the lower and upper slopes north and south of Warburton township.
Powelltown Correa <i>Correa reflexa</i> var. <i>lobata</i>	0.0101	0.0096	Dispersed	Medium	Habitat is mapped very extensively across the project area.
Toothed Leionema <i>Leionema bilobum</i> subsp. <i>serrulatum</i>	0.0055	0.0053	Dispersed	High/recorded	Habitat mapped very extensively across the project area. Habitat is not mapped in the valley.
White Star-bush <i>Asterolasia asteriscophora</i> subsp. <i>albiflora</i>	0.0095	0.0088	Dispersed	Negligible	Scattered mapped habitat along the valley floor and on the lower slopes of Mount Little Joe.
Wavy Fork-moss <i>Dicranoloma platycaulon</i>	0.0045*	0.0050	Dispersed	High	Scattered mapped habitat on lower and upper slopes of Mount Donna Buang and the Yarra State Forest.

*species offset not triggered for this scenario

2.2 Credit register and broker searches for private land offset sites

The Native Vegetation Credit Register (NVCR) was searched using DELWP's online tool (<https://nvcr.delwp.vic.gov.au>) and a broker has been contacted to investigate the availability of the required species habitat units on the credit market. The NVCR search revealed that not all the offset could be satisfied on one site. However, there are sites across Victoria which have offsets for five species including Nunniong Everlasting, Tall Astelia, Mountain Bird-orchid, White Star-bush and Toothed Leionema.

An offset broker has explored a range of species matching matrices to maximise the overlap of quantities of SHUs for different species drawn from different existing and potential offset sites. Based on that analysis, there are insufficient available credits for Leadbeater's Possum, Smoky Mouse, Fairy Lanterns and Wavy Fork-moss on the credit market on private land. The remaining species are available at private land sites that have expressed interest in offset registration.

2.3 Yarra Ranges Council existing offset sites

Yarra Ranges Council has existing offset sites which they manage within the municipality. The species credits available at these sites were reviewed against the project's offset requirements. This revealed that the existing YRC offset sites could only provide a small number of credits for one species; Powelltown Correa (2.860 SHUs of the 25 plus Powelltown Correa SHUs required for either project development scenario). On this basis, the use of credits from YRC's existing offset scheme is not considered viable.

2.4 Offset site establishment desktop analysis

2.4.1 Analysis and site review

The possibility of establishing a new offset site on private or Crown land was investigated through desktop analysis. Given the scale of species habitat units required, as summarised in Table 1, the following method was applied to identifying potential candidate locations to establish a new offset site on private and/or Crown land:

- Aggregate DELWP habitat models for the 14 species in Table 1 into one seamless layer in a GIS environment. This revealed that only 13 of the 14 species have co-located modelled habitat with Wavy Fork-moss not co-occurring with all other species. Therefore, the Wavy Fork-moss HIM is presented as a separate layer in Figure 1.
- A visual inspection of aggregated habitat modelling and the Wavy Fork-moss HIM was undertaken across all tenures. This visual inspection also considered the area occupied by co-located modelled habitat. Size of modelled habitat is important and based on the high importance scores of modelled habitat in the region, and the likely high site condition score, it was anticipated that a ratio of 3 hectares of land protected could generate 1 species habitat unit. This approach assumed some level of security gain at the candidate offset sites.
- Overlay the candidate sites on topographic and aerial imagery and undertake further visual inspection sites for location, native vegetation cover/condition, management issues, offset eligibility and the presence of a Bushfire Management Overlay or other restrictive planning controls or land uses (e.g. conflict with the WMBD project trail network).

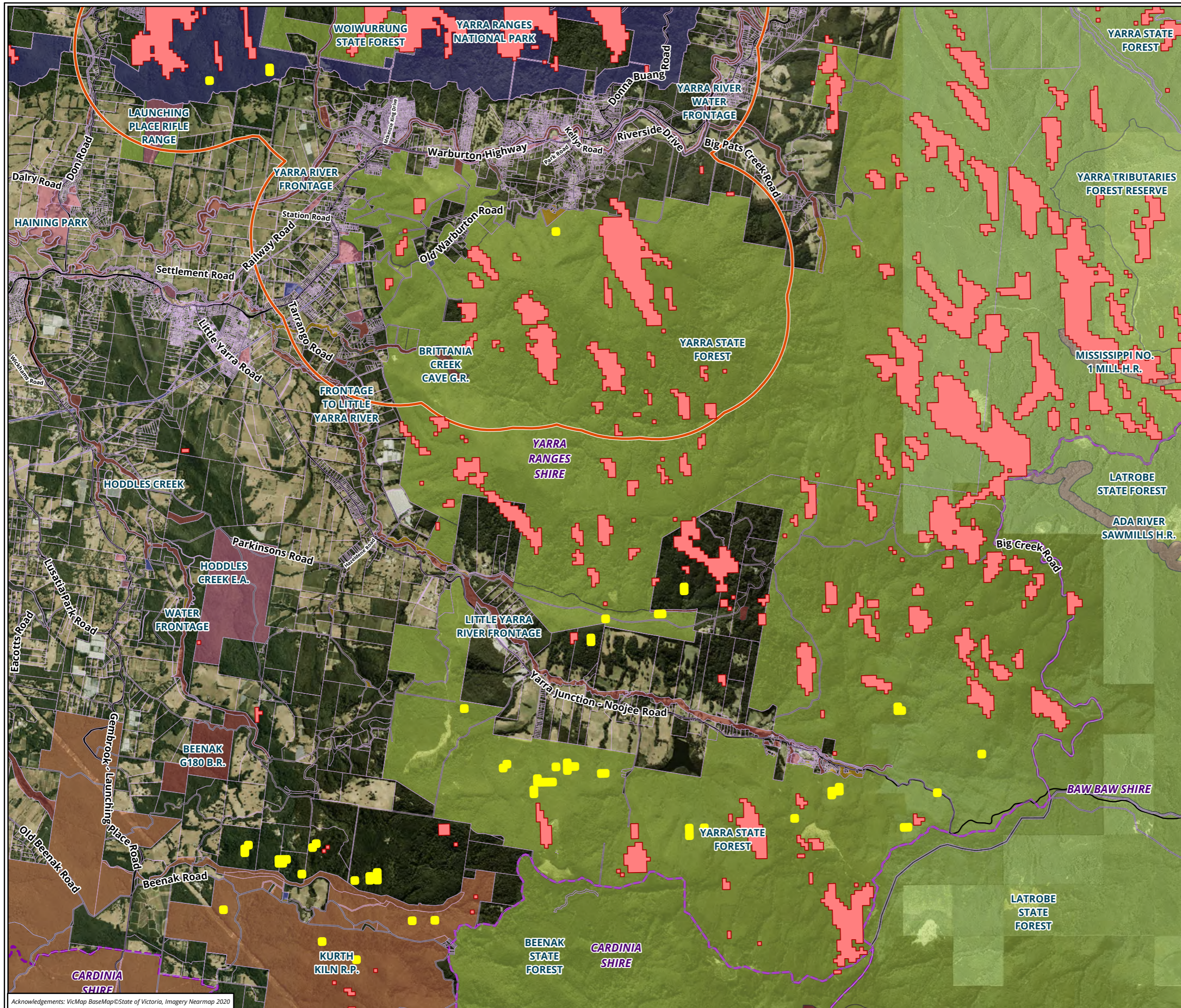
This process revealed 15 potential offset sites across Crown and private land between Warburton and Noojee where suitable modelled habitat occurs (Figure 1). Of these 15 sites, four were discarded from further analysis as three occur in the Yarra Ranges National Park (a land tenure not suitable for offsets) and a fourth site was a very small area of co-located habitat on private land that would be highly unlikely to generate sufficient

credits. The remaining 11 sites were then subject to further detailed desktop analysis and reviewed for suitability and eligibility (Table 2 and Table 3).

Eleven separate desktop offset scenarios were analysed for the potential offset sites using DELWP's Ensym computer program to determine species habitat units that could be generated. The Ensym offset scenarios were produced using extant 2005 EVC mapping to delineate habitat zones and using different gain scoring arrangements driven by land tenure or presence of planning scheme overlay (e.g. ESO, VPO, SLO). Buffers related to cadastral boundaries and the presence of nearby BMOs were also applied to each of the 11 sites prior to analysis. In summary the following rules were applied to generate Ensym offset scenarios:

- Draw habitat zone geometry based on extant DELWP 2005 EVC mapping/modelling.
- Buffer offset site habitat zones internally by 6 metres from all parcel boundaries.
- Check for any dwellings within 150 metres of the site and add a 150 metre buffer to these dwelling and exclude the buffer area from the offset site due to presence of BMO on all sites.
- Apply an existing habitat score of 0.65 to 0.70 depending of DELWP modelled site condition score.
- Apply a gain score 0.20 to 0.25 habitat points per hectare depending on land tenure (Crown versus private land) to reflect offset security arrangements.

The results of the Ensym scenarios tests for the 11 site are provided in Appendix 2 and summarised in Table 2 and Table 3.



Legend

- Scenario 1 & 2 - Extent of 13 colocated species
- Wavey Fork Moss
- Public land category**
- Unknown
- Community use area
- Historic and cultural features area
- National park
- Natural features reserve
- Regional park
- Services and utilities
- State Forest
- Uncategorised public land
- Water production

Figure 1 Species offset opportunities - Scenario 1 & 2 - 13 species colocated and extent of modelled habitat for Wavey Fork Moss

0 1 2 3
 Kilometers
 Scale: 1:70,000 @ A3
 Coordinate System: GDA 1994 MGA Zone 55



Matter: 33805,
 Date: 28 September 2021,
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 Layout: 33805_OS_F1_SpeciesOffsetOpportunities
 Project: P:\33805\33805\Mapping\33805_Warburton_EES_Figures_Ecology.aprx

Acknowledgements: VicMap BaseMap © State of Victoria, Imagery Nearmap 2020

Table 2 Summary of Ensym scenario test outcomes for species habitat units at 11 potential offset sites (*SHU – species habitat unit)

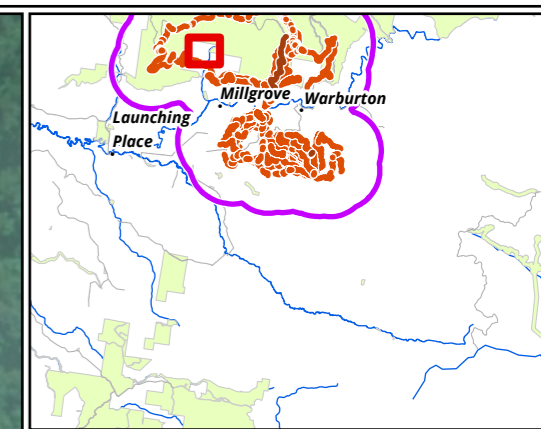
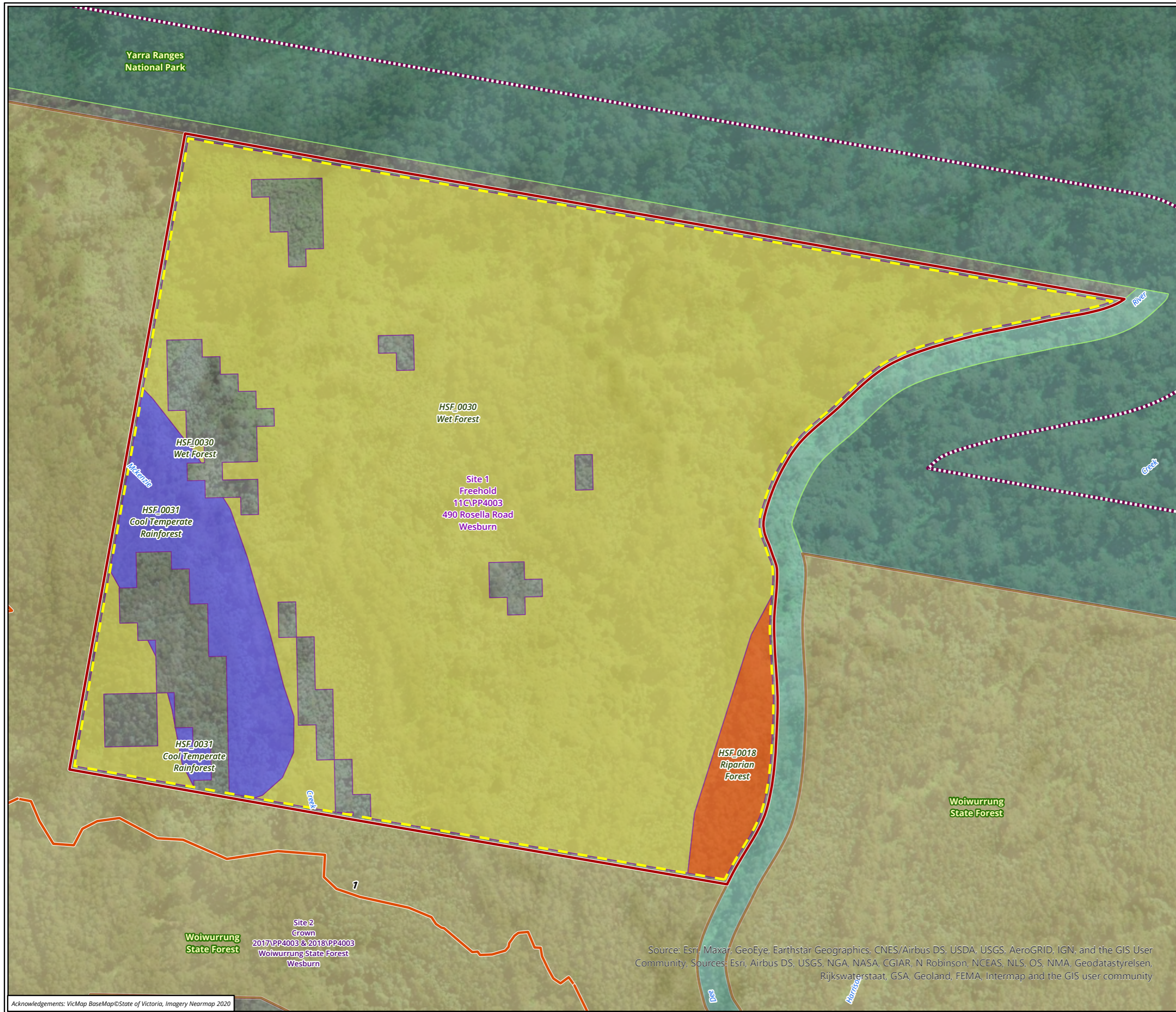
Common Name	Max. project SHU* requirement (S1 & S2)	Site 1	Outcome	Site 2	Outcome	Site 6	Outcome	Site 7	Outcome	Site 9-10	Outcome	Site 11	Outcome	Site 12	Outcome	Site 13	Outcome	Site 14	Outcome	Site 15	Outcome
Brickmaker's Sedge	25.214	18.095	-7.119	40.697	15.483	37.828	12.614	29.1	3.886	493.707	468.493	65.41	40.196	21.221	-3.993	5.074	-20.14	5.928	-19.286	10.992	-14.222
Fairy Lanterns	15.21	18.066	2.856	38.275	23.065	37.516	22.306	29.094	13.884	471.215	456.005	65.367	50.157	21.227	6.017	5.078	-10.132	5.93	-9.28	10.999	-4.211
Jungle Bristle-fern	20.62	18.094	-2.526	39.633	19.013	37.712	17.092	29.081	8.461	493.715	473.095	65.41	44.79	21.221	0.601	5.074	-15.546	5.928	-14.692	10.992	-9.628
Leadbeater's Possum	21.107	20.245	-0.862	45.874	24.767	41.96	20.853	31.841	10.734	537.111	516.004	72.682	51.575	23.46	2.353	5.21	-15.897	6.58	-14.527	10.97	-10.137
Long Pink-bells	26.023	18.095	-7.928	40.729	14.706	37.828	11.805	29.101	3.078	493.707	467.684	65.41	39.387	21.221	-4.802	5.074	-20.949	5.928	-20.095	10.992	-15.031
Mountain Bird-orchid	9.342	17.192	7.85	36.959	27.617	37.197	27.855	22.056	12.714	488.04	478.698	65.279	55.937	21.332	11.99	5.08	-4.262	5.928	-3.414	9.861	0.519
Nunniong Everlasting	26.076	18.095	-7.981	40.728	14.652	37.828	11.752	29.105	3.029	493.667	467.591	65.411	39.335	21.221	-4.855	5.072	-21.004	5.927	-20.149	10.994	-15.082
Powelltown Correa	25.858	18.095	-7.763	40.719	14.861	37.828	11.97	29.101	3.243	493.707	467.849	65.41	39.552	21.221	-4.637	5.074	-20.784	5.928	-19.93	10.992	-14.866
Smoky Mouse	20.684	16.615	-4.069	38.668	17.984	37.935	17.251	27.938	7.254	471.662	450.978	63.528	42.844	20.273	-0.411	4.441	-16.243	5.584	-15.1	10.207	-10.477
Tall Astelia	19.073	18.091	-0.982	40.749	21.676	37.659	18.586	29.069	9.996	493.874	474.801	65.411	46.338	21.221	2.148	5.074	-13.999	5.928	-13.145	10.991	-8.082
Toothed Leionema	23.128	18.095	-5.033	40.712	17.584	37.826	14.698	29.07	5.942	493.775	470.647	65.41	42.282	21.221	-1.907	5.074	-18.054	5.928	-17.2	10.992	-12.136
Tree Geebung	19.885	18.093	-1.792	40.796	20.911	37.758	17.873	28.726	8.841	488.728	468.843	65.41	45.525	21.225	1.34	5.071	-14.814	5.928	-13.957	10.992	-8.893
Wavy Fork-moss	8.503	0	-8.503	38.202	29.699	37.897	29.394	0	-8.503	389.182	380.679	57.133	48.63	0	-8.503	0	-8.503	0	-8.503	0	-8.503
White Star-bush	11.417	0	-11.417	37.887	26.47	38.032	26.615	29.063	17.646	449.522	438.105	48.062	36.645	21.206	9.789	5.066	-6.351	5.915	-5.502	9.856	-1.561

Table 3 Review of 15 potential offset sites (patches of combined modelled species habitat) on Crown and private land, *excludes other public land tenures such as road reserves deemed unsuitable for offsets**

Site (see Figure 2)	Location description	***Area of combined habitat	Conclusion on suitability	Comments / rationale / offset considerations
Site 1 - Private land	490 Rosella Road Wesburn. Access site from Dee Road and then fire tracks.	80.981 of private land	<ul style="list-style-type: none"> Private land possibly suitable. Public land inlier that may be subject to future Crown acquisition. 	<ul style="list-style-type: none"> Private land does not generate sufficient gains for twelve of the required 14 species. No credits for Wavy Fork-moss or White Star-bush. Could be merged with site 2 to achieve the offsets goals. Site is within close proximity to Warburton. Lower quality vegetation due to cattle grazing and past clearing.
Site 2- Crown land	Woiwurrung State Forest. Access site from Dee Road and then fire trail tracks.	229.372 of Crown land	<ul style="list-style-type: none"> Crown land suitable. State Forest inlier in Yarra Ranges National Park 	<ul style="list-style-type: none"> Site has all 14 required species and sufficient gains. Site is within close proximity to Warburton Lower quality vegetation then surrounding National Park Trails designed through this area will need to be buffered out of offset site.
Site 3 - Crown land	Yarra Ranges National Park.	N/A	<ul style="list-style-type: none"> Not eligible. 	<ul style="list-style-type: none"> Site is not considered eligible, it is already situated in the Yarra Ranges National Park.
Site 4 - Crown land	Yarra Ranges National Park.	N/A	Not eligible.	<ul style="list-style-type: none"> Site is not eligible, it is already situated in the Yarra Ranges National Park.
Site 5- Crown land	Yarra State Forest.	N/A	<ul style="list-style-type: none"> Not eligible. 	<ul style="list-style-type: none"> Site is not eligible, it located in the Yarra State Forest, but is amongst the trail network.

Site (see Figure 2)	Location description	***Area of combined habitat	Conclusion on suitability	Comments / rationale / offset considerations
Site 6 – Private land	285 Blacksands Road, Three Bridges. Access site from Yarra Junction- Noojee Road and then Blacksands Road.	209.8 hectares of private land.	Private land suitable.	<ul style="list-style-type: none"> • Site has all 14 required species and sufficient gains. • Site is within close proximity to the area of Three Bridges and has access off the Yarra Junction- Noojee Road.
Site 7- Crown land	Yarra State Forest, Three Bridges. Access site from Yarra Junction- Noojee road and then Blacksands Road.	161.204 hectares of crown land.	<ul style="list-style-type: none"> • Crown land possibly suitable but DELWP FFM may not support this site due to State Forest zoning. 	<ul style="list-style-type: none"> • Site has sufficient gains for 13 species except has no credits for Wavy Fork-moss. • Site is within close proximity to the area of Three Bridges and has access off the Yarra Junction- Noojee Road. • Need to consider DELWP FFM comments regarding this site.
Site 8 – private land	Yarra Junction- Noojee Road, Three Bridges	Area was considered too small.	<ul style="list-style-type: none"> • Not eligible due to size. 	<ul style="list-style-type: none"> • Site is not eligible it is too small to consider suitable.
Site 9 and site 10 (combined).	Yarra State Forest Gilderoy. Access site from Yarra Junction- Noojee Road and then from multiple roads, like Hackett’s Creek Road.	2733.85 hectares of Crown land.	<ul style="list-style-type: none"> • Crown land possibly suitable but DELWP FFM may not support this site due to State Forest zoning. 	<ul style="list-style-type: none"> • Site has all required species and sufficient gains. • Site is within close proximity to the area of Three Bridges and has access off the Yarra Junction- Noojee Road. • Need to consider DELWP FFM comments regarding this site.
Site 11– Private land	Mannagum Road, Three Bridges. Access site from Yarra Junction- Noojee road and then Mannagum Road.	363.41 hectares of private land.	<ul style="list-style-type: none"> • Private land suitable. 	<ul style="list-style-type: none"> • Site has all required species and sufficient gains. • Site is within close proximity to the area of Three Bridges and has access off the Yarra Junction- Noojee Road.

Site (see Figure 2)	Location description	***Area of combined habitat	Conclusion on suitability	Comments / rationale / offset considerations
Site 12- Private land	565 Thonemans Road, Hoddles Creek. Access site from Yarra Junction- Noojee road, then Hazeldene Road and Thoenmans Road.	118.325 hectares of private land.	<ul style="list-style-type: none"> Not suitable as a single site due to lack of suitable credits. 	<ul style="list-style-type: none"> Has modelled habitat but does not meet six of the species habitat unit amount requirements. Does not have modelled habitat for Wavy Fork-moss
Site 13- Private land	630 Thonemans Road, Hoddles Creek. Access site from Yarra Junction- Noojee road, then Hazeldene Road and Thoenmans Road.	28.264 hectares of private land.	<ul style="list-style-type: none"> Not suitable as a single site due to lack of suitable credits. 	<ul style="list-style-type: none"> Has modelled habitat but does not meet 13 of the species habitat unit amount requirements. Does not have modelled habitat for Wavy Fork-moss
Site 14- Private land	600 Thonemans Road, Hoddles Creek. Access site from Yarra Junction- Noojee road, then Hazeldene Road and Thoenmans Road.	32.898 hectares of private land.	<ul style="list-style-type: none"> Not suitable as a single site due to lack of suitable credits. 	<ul style="list-style-type: none"> Has modelled habitat but does not meet 13 of the species habitat unit amount requirements. Does not have modelled habitat for Wavy Fork-moss
Site 15 - Private land	150 Old Mill Road, Hoddles Creek. Access off Gembrook-Launching Place Road and Old Mill Road.	61.161 hectares of private land.	<ul style="list-style-type: none"> Not suitable as a single site due to lack of suitable credits. 	<ul style="list-style-type: none"> Has modelled habitat but does not meet 12 of the species habitat unit amount requirements. Does not have modelled habitat for Wavy Fork-moss



- Legend**
- Warburton_Tracks_and_Trails_Current**
- Proposed MTB trail
 - ⋯ Potential offset properties - 150m buffer
 - ▭ Potential offset property
 - - - Internal 6m buffer from boundary
- Ecological Vegetation Class**
- Cool Temperate Rainforest
 - Riparian Forest
 - Wet Forest
- Public land category**
- National parks and nature conservation reserves
 - Other public land
 - State forest

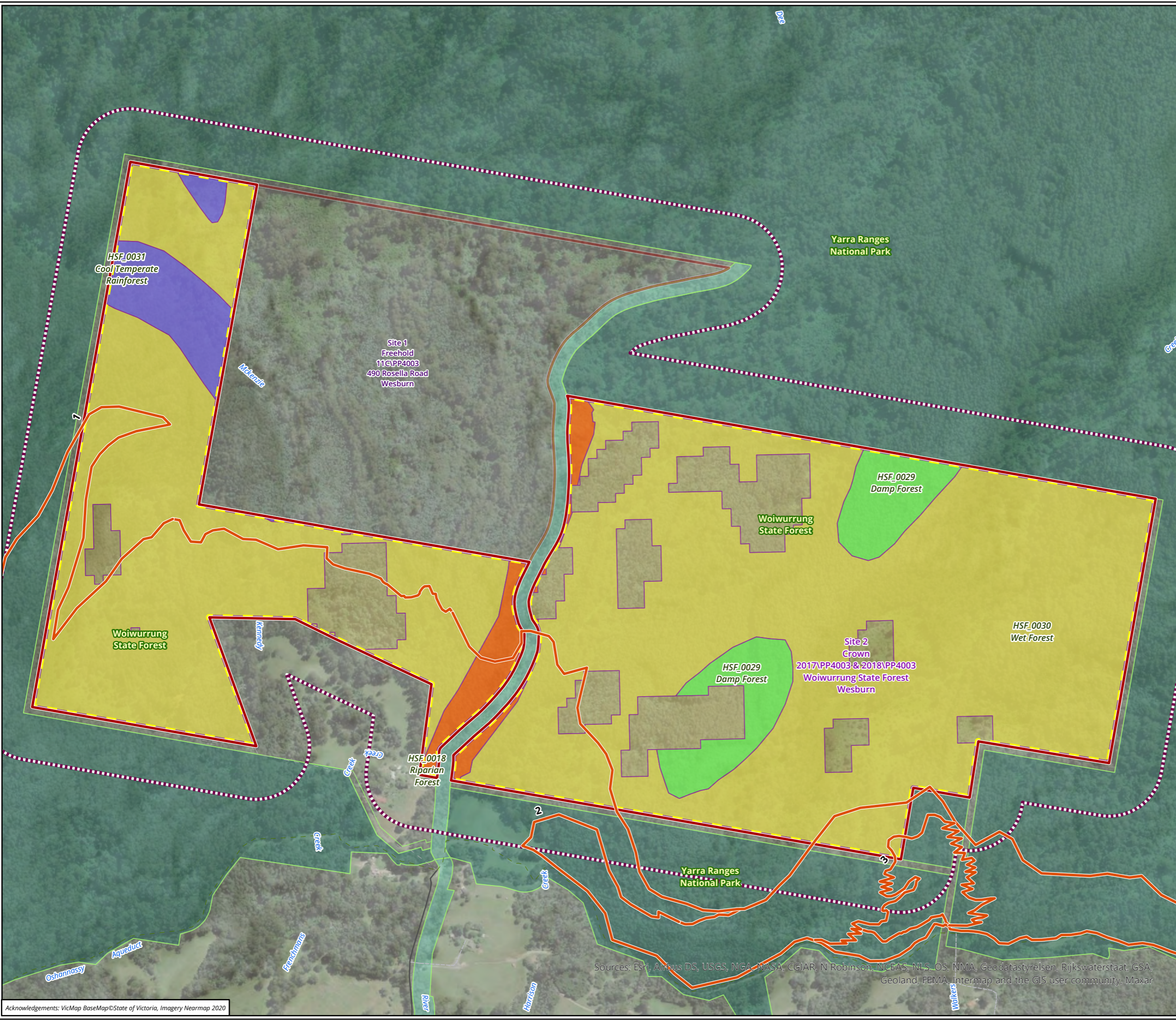
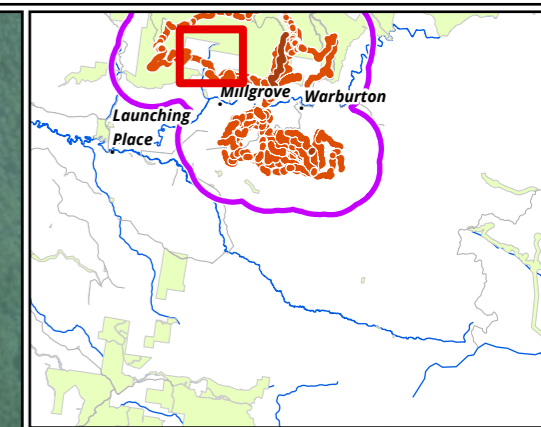
Figure 2.1 Potential offset properties - Site 1

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Metres
Scale: 1:5,000 @ A3
Coordinate System: GDA 1994 MGA Zone 55

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Date: 28 September 2021,
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Layout: 33805_OS_F2_PotentialOffsetProperties
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Legend

Warburton_Tracks_and_Trails_Current

- Proposed MTB trail
- Potential offset properties - 150m buffer
- Potential offset property
- Internal 6m buffer from boundary

Ecological Vegetation Class

- Cool Temperate Rainforest
- Damp Forest
- Riparian Forest
- Wet Forest

Public land category

- National parks and nature conservation reserves
- Other public land
- State forest

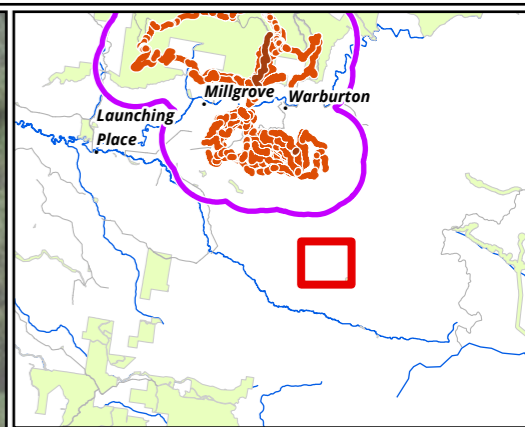
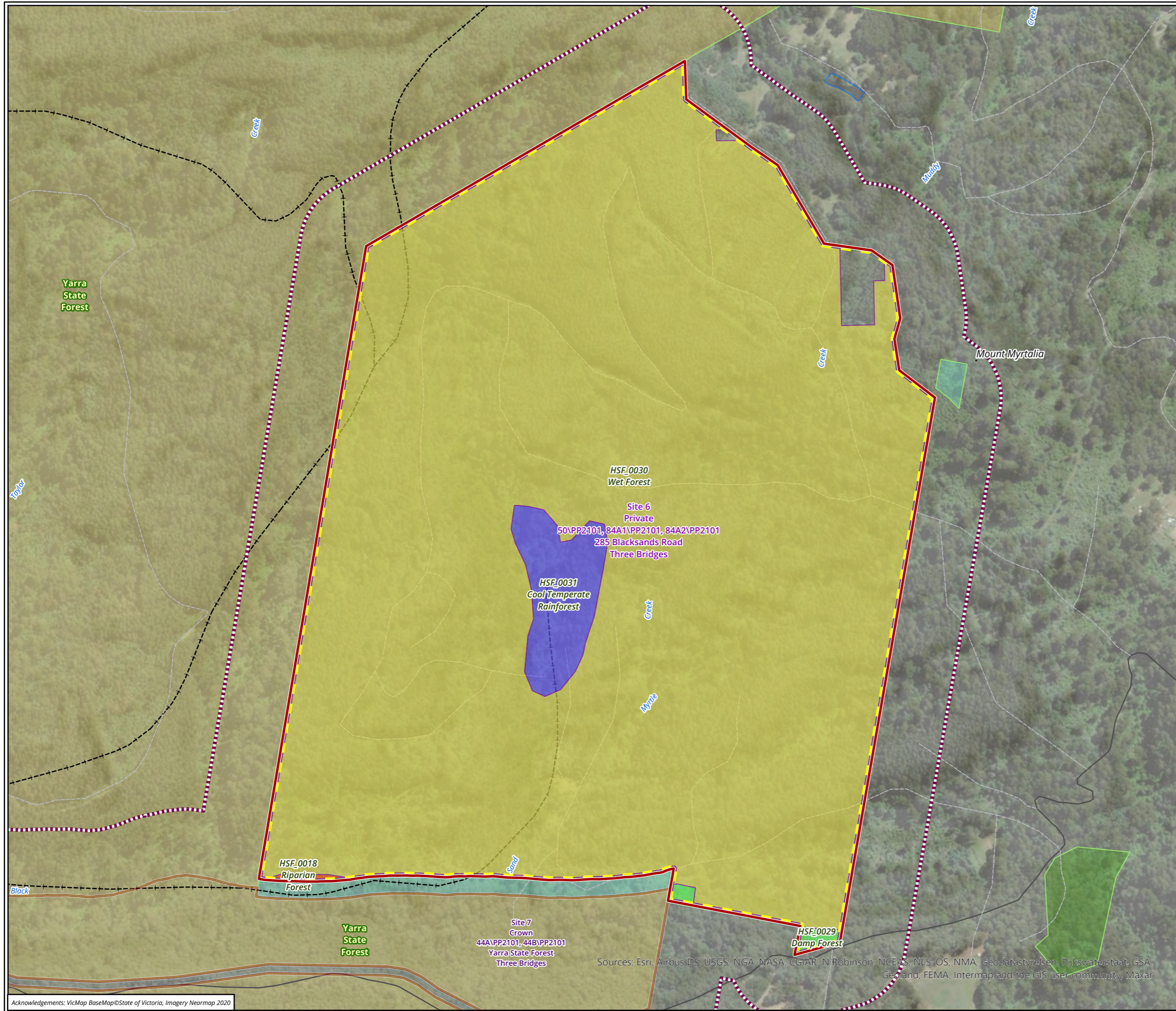
Figure 2.2 Potential offset properties - Site 2

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- Legend**
- Potential offset properties - 150m buffer
 - Potential offset property
 - Internal 6m buffer from boundary
- Ecological Vegetation Class**
- Cool Temperate Rainforest
 - Damp Forest
 - Riparian Forest
 - Wet Forest
- Public land category**
- Other conservation reserves
 - Other public land
 - State forest

Figure 2.3 Potential offset properties - Site 6

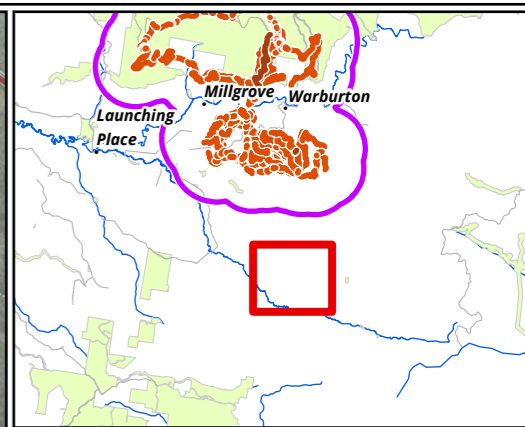
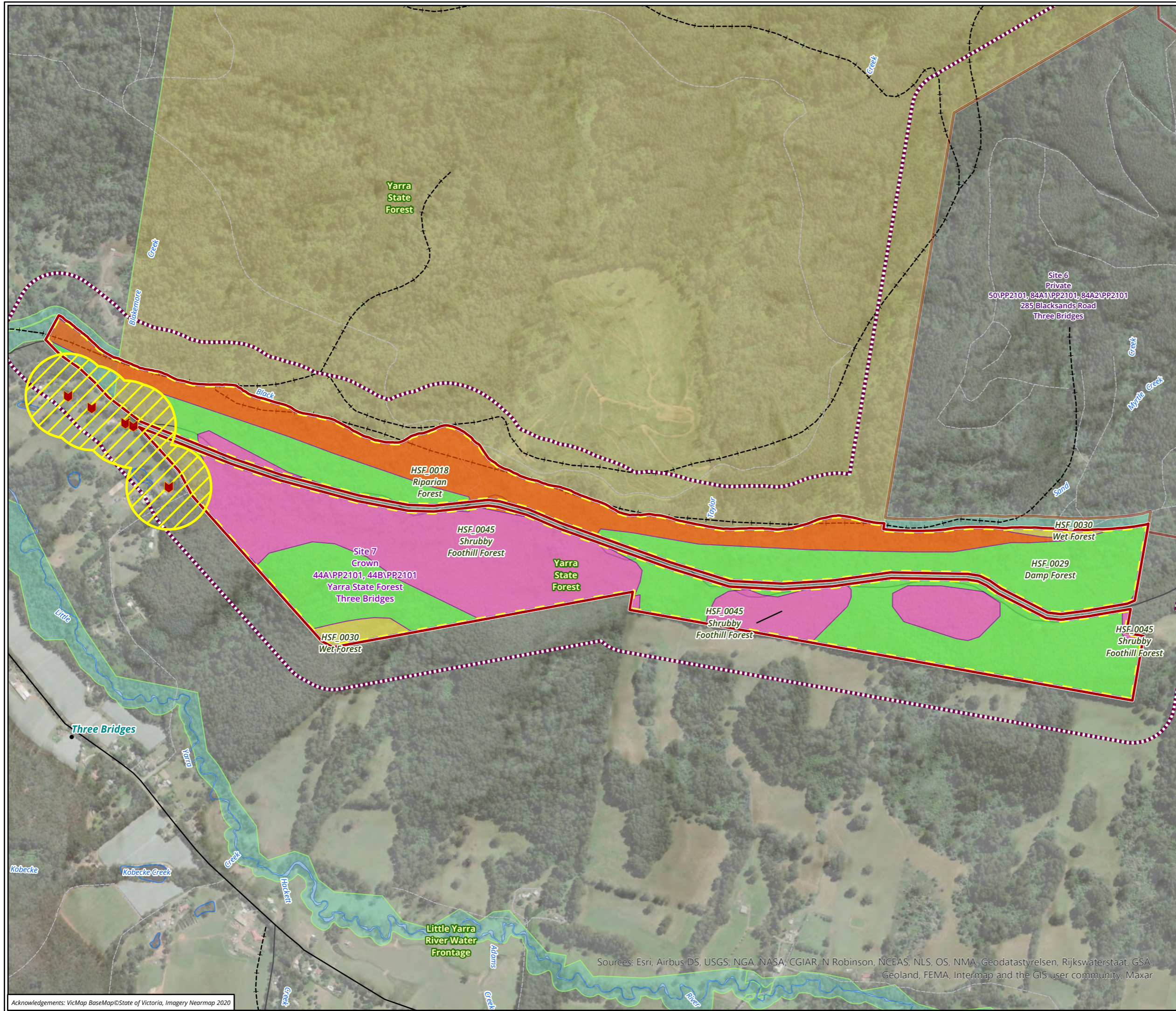
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- Legend**
- Adjacent dwelling
 - Adjacent dwelling - 150m buffer
 - Potential offset properties - 150m buffer
 - Potential offset property
 - Internal 6m buffer from boundary
- Ecological Vegetation Class**
- Damp Forest
 - Riparian Forest
 - Shrubby Foothill Forest
 - Wet Forest
- Public land category**
- Other public land
 - State forest

Figure 2.4 Potential offset properties - Site 7

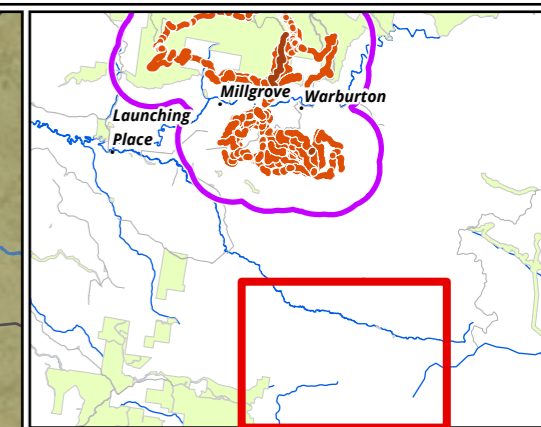
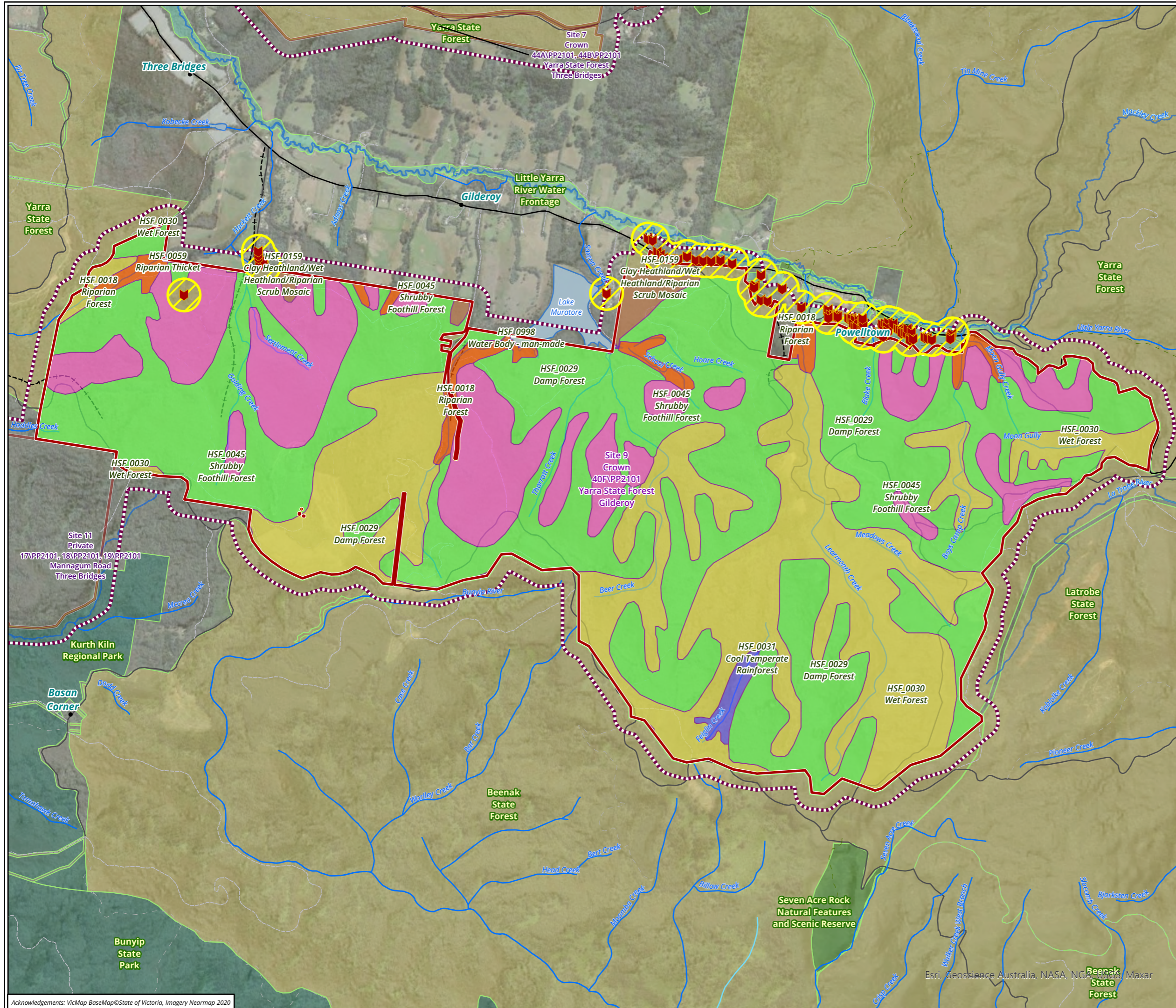
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Legend

- Adjacent dwelling
- Adjacent dwelling - 150m buffer
- Potential offset properties - 150m buffer
- Potential offset property
- Internal 6m buffer from boundary

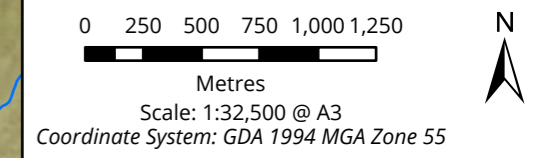
Ecological Vegetation Class

- Clay Heathland/Wet Heathland/Riparian Scrub Mosaic
- Cool Temperate Rainforest
- Damp Forest
- Riparian Forest
- Riparian Thicket
- Shrubby Foothill Forest
- Wet Forest

Public land category

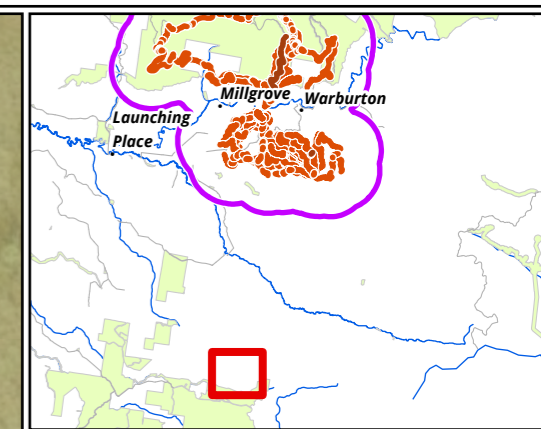
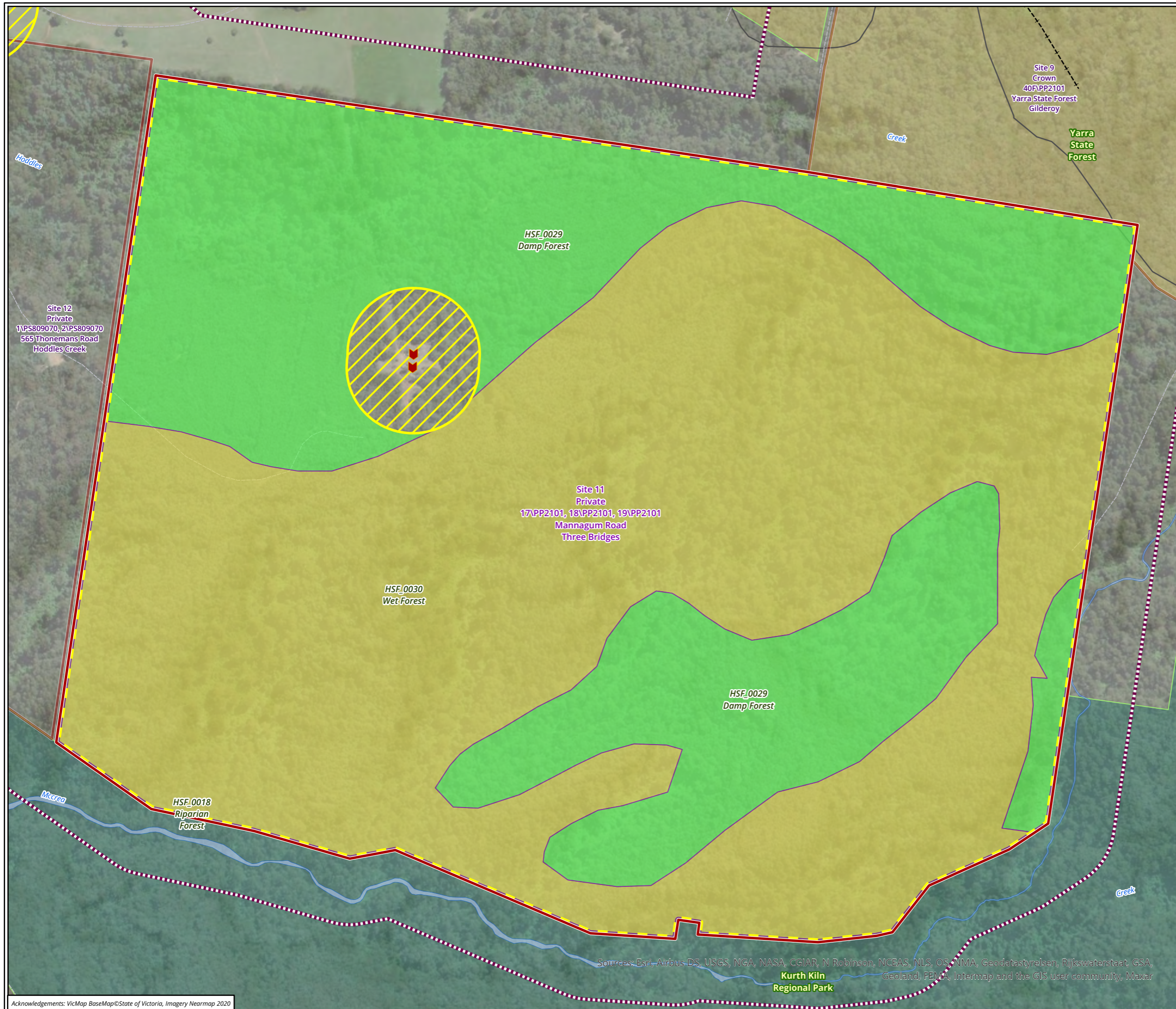
- National parks and nature conservation reserves
- Other conservation reserves
- Other public land

Figure 2.5. Potential offset properties - Site 9



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- Legend**
- Adjacent dwelling
 - Adjacent dwelling - 150m buffer
 - Potential offset properties - 150m buffer
 - Potential offset property
 - Internal 6m buffer from boundary
- Ecological Vegetation Class**
- Damp Forest
 - Riparian Forest
 - Wet Forest
- Public land category**
- National parks and nature conservation reserves
 - State forest

Figure 2.6 Potential offset properties - Site 11

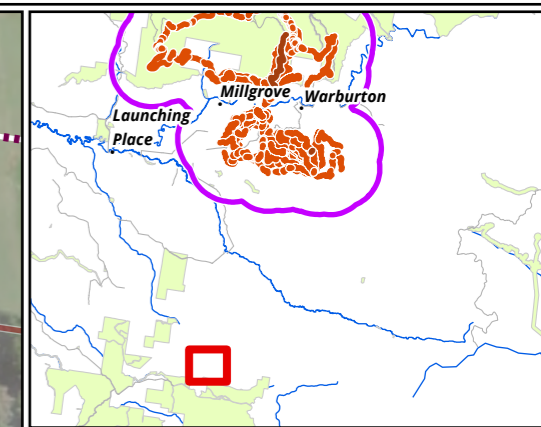
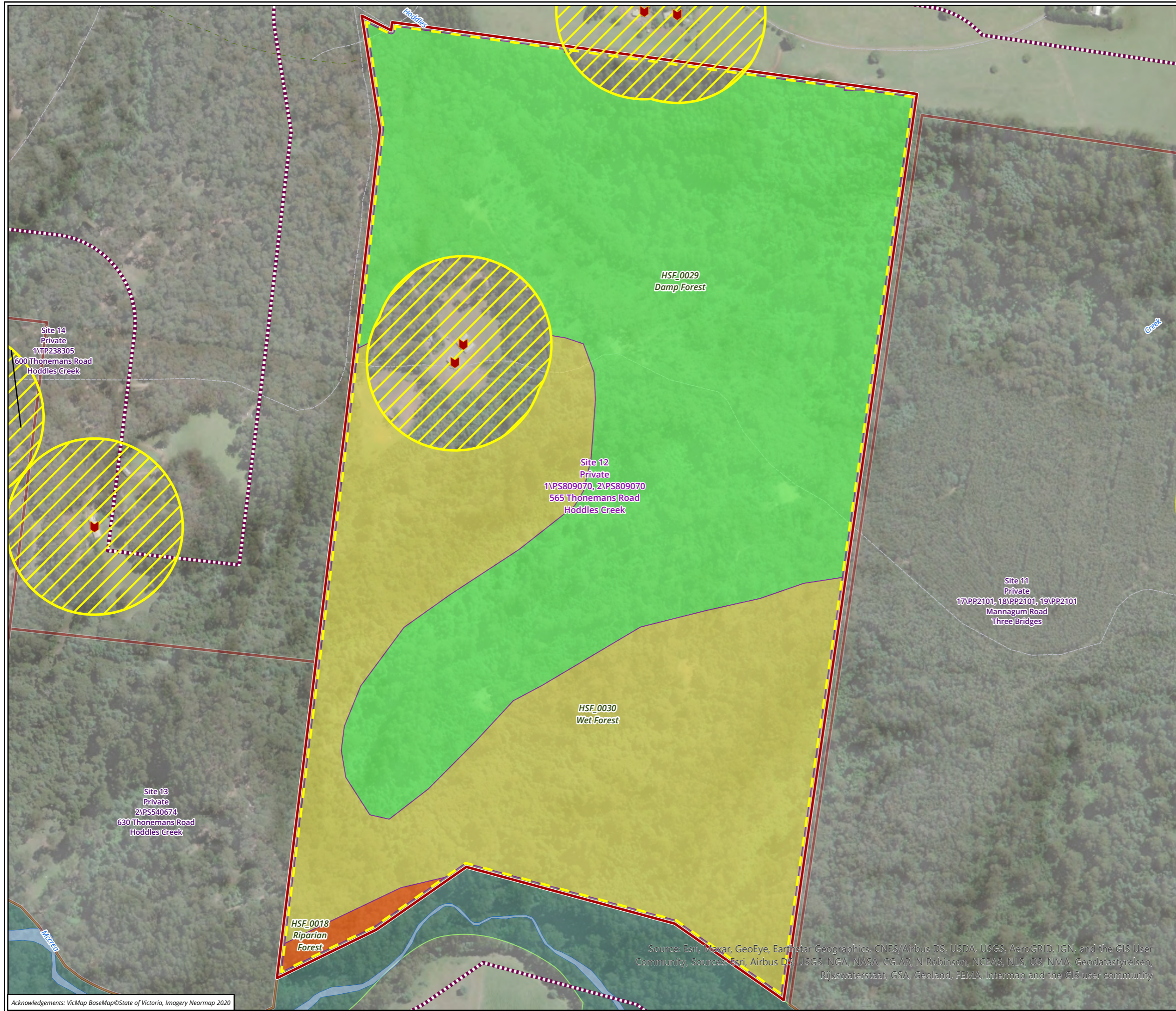
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- Legend**
- Adjacent dwelling
 - Adjacent dwelling - 150m buffer
 - Potential offset properties - 150m buffer
 - Potential offset property
 - Internal 6m buffer from boundary
- Ecological Vegetation Class**
- Damp Forest
 - Riparian Forest
 - Wet Forest
- Public land category**
- National parks and nature conservation reserves

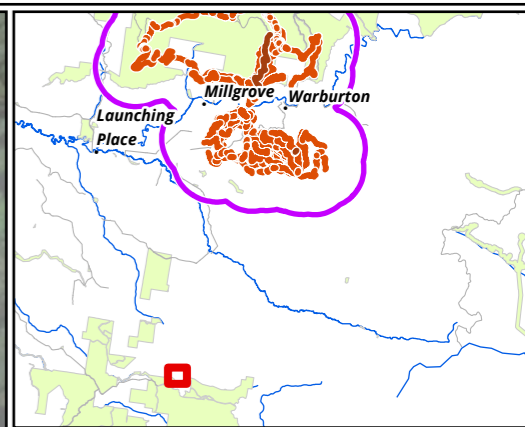
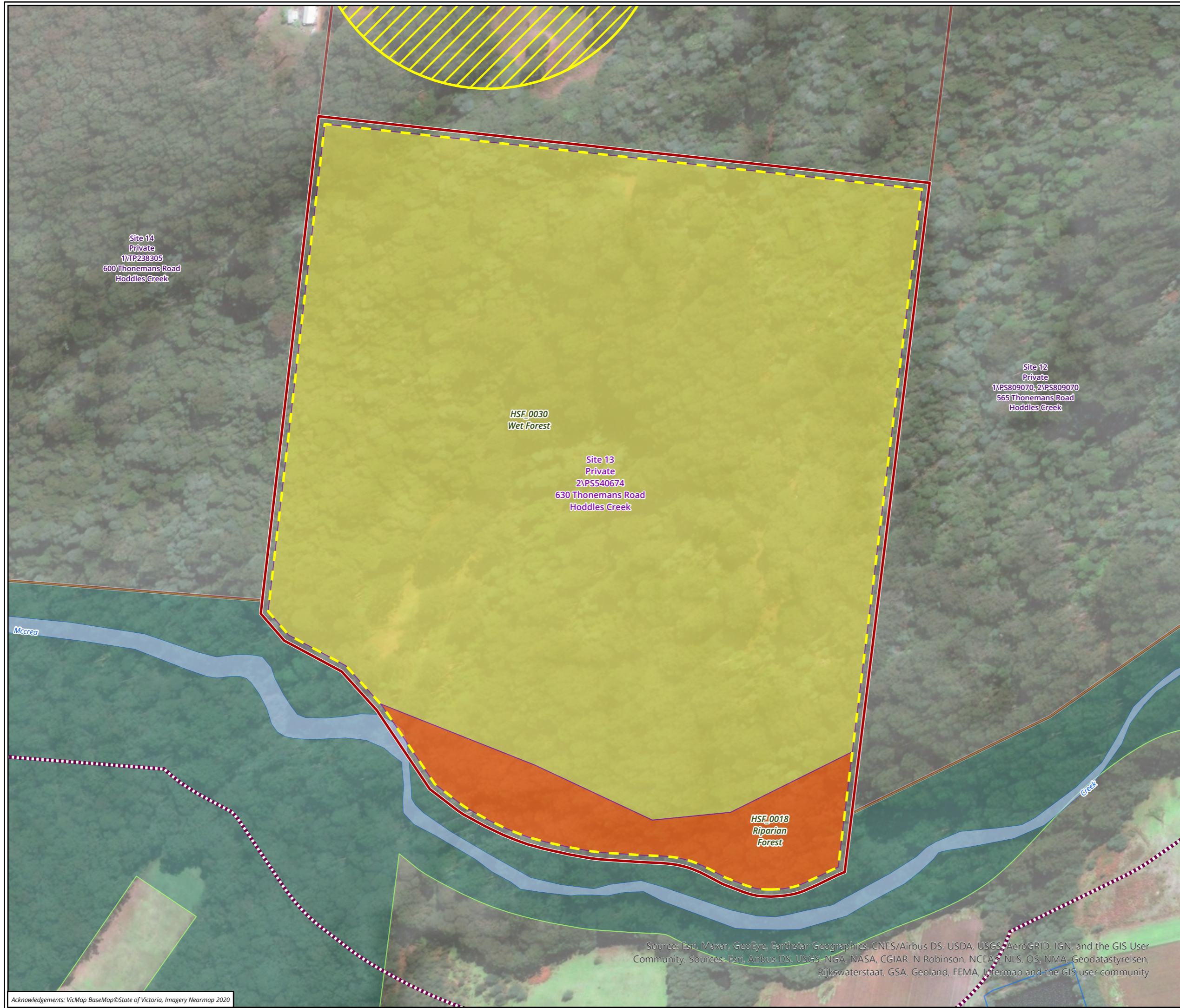
Figure 2.7 Potential offset properties - Site 12

0 40 80 120 160 200
 Metres
 Scale: 1:6,000 @ A3
 Coordinate System: GDA 1994 MGA Zone 55

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- Legend**
- Adjacent dwelling - 150m buffer
 - Potential offset properties - 150m buffer
 - Potential offset property
 - Internal 6m buffer from boundary
- Ecological Vegetation Class**
- Riparian Forest
 - Wet Forest
- Public land category**
- National parks and nature conservation reserves

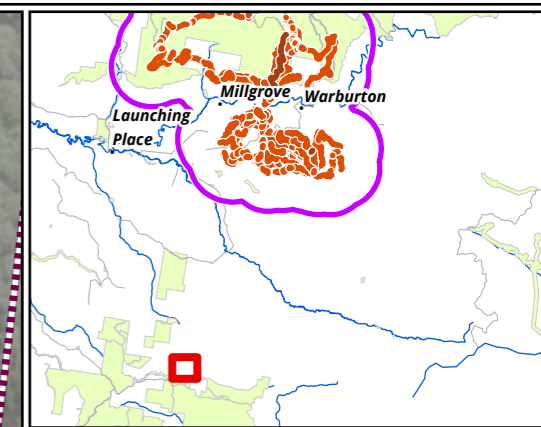
Figure 2.8 Potential offset properties - Site 13

0 20 40 60 80 100
 Metres
 Scale: 1:3,000 @ A3
 Coordinate System: GDA 1994 MGA Zone 55



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- Legend**
- Adjacent dwelling
 - Adjacent dwelling - 150m buffer
 - Potential offset properties - 150m buffer
 - Potential offset property
 - Internal 6m buffer from boundary
- Ecological Vegetation Class**
- Damp Forest
 - Wet Forest
- Public land category**
- National parks and nature conservation reserves

Site 15
Private
131PP2101
150 Old Mill Road
Hoddles Creek

HSF_0029
Damp Forest

Site 14
Private
1NTP238305
600 Thonemans Road
Hoddles Creek

HSF_0030
Wet Forest

Site 13
Private
2LPS540674
630 Thonemans Road
Hoddles Creek

Figure 2.9 Potential offset properties - Site 14

0 30 60 90 120 150

Metres

Scale: 1:4,000 @ A3

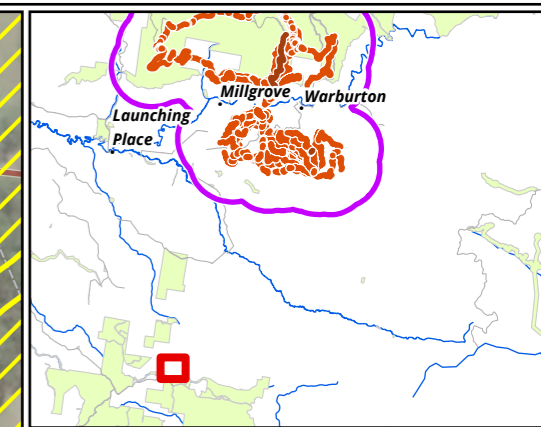
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Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodastyrrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community

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- Legend**
- Adjacent dwelling
 - Adjacent dwelling - 150m buffer
 - Potential offset properties - 150m buffer
 - Potential offset property
 - Internal 6m buffer from boundary
- Ecological Vegetation Class**
- Damp Forest
 - Lowland Forest
 - Wet Forest
- Public land category**
- National parks and nature conservation reserves

Site 15
Private
13\PP2101
150 Old Mill Road
Hoddles Creek

Site 14
Private
1\TP238305
600 Thonemans Road
Hoddles Creek

Figure 2.10 Potential offset properties - Site 15

0 30 60 90 120 150

Metres

Scale: 1:4,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55



Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community

2.4.2 Summary of results and options

The offset site analysis process revealed there are suitable Crown and private land sites within, or in close proximity to, the WMBD project area that could generate the required SHUs to achieve a no net loss outcome. Of the 11 sites analysed in detail only the following two Crown land and two private land sites were identified that could meet the project's offset requirements at the one location:

- Site 2 – Woiwurrung State Forest (Crown land), which is an inlier on the southern slopes of the Yarra Ranges National Park just north of Warburton in the WMBD project area.
- Site 6 – a private land parcel at Three Bridges south of the WMBD project area.
- Sites 9-10 – a large area of Yarra Ranges State Forest (Crown land) near Powelltown south of the WMBD project area.
- Site 11 – a private land parcel at Three Bridges south of the WMBD project area.

The remaining sites either do not have Wavy Fork-moss modelled habitat and/or cannot generate sufficient species habitat units to achieve a no net loss outcome (Table 1).

2.4.3 Land manager/owner consultation

Crown land sites

Initial discussions have been held with DELWP Forest and Fire Management (FFM) for the Yarra District regarding the sites 9-10 (and also site 7). These discussions have indicated that the areas of the Yarra State Forest south of Powelltown would not be supported by DELWP FFM due to fire management zoning and VicForests timber allocations in these areas that would make the sites incompatible with the eligibility and management requirements for a Crown land offsets.

This outcome leaves site 2 (Woiwurrung State Forest) as the most viable Crown land offset site. Discussions with DELWP and Parks Victoria have indicated that the adjacent private land site (site 1, Rosella Road Wesburn) is a prospective future land acquisition into the public land estate. Therefore, the combination of site 1 and site 2 could achieve a no net loss for the project and make a significant contribution to native vegetation and habitat protection/restoration on public land in the vicinity of where project impacts will occur around Warburton.

Private land

Yarra Ranges Council has made contact with the owners of private land sites 6 and 11. These land owners have indicated they are interest in establishing offset sites on their properties and are willing to enter detailed negotiations.

3 Offset site eligibility and management

This section provides an overview of site eligibility according to DELWP Native Vegetation Credit Register (NVCR) requirements for registration of a private or Crown land offset site. It also outlines the required security and management arrangements.

Offset sites must comply with DELWP's criteria to be eligible as an offset. These criteria must be applied before available gain is formally calculated and the registration process commences. Offset site eligibility criteria include consideration of land tenure, security and the current and future land uses of the proposed site. A proposed offset site is eligible if there are no current and future land use(s) identified that are incompatible with managing native vegetation for conservation and an appropriate legal security mechanism can be established.

An evaluation of site eligibility for the suitable sites identified in the previous strategy section (i.e. sites 2, 6 and 11) according to DELWP's criteria as set out in the Native Vegetation Gain Scoring Manual (DELWP 2017b) is provided in Table 4 below.

Table 4 Assessment against offset eligibility criteria

Criteria (DELWP 2017b)	Criteria met?	Response
Minimum site condition score	Yes	The sites are highly likely to meet the minimum site condition score of 30 out of 75, given the site condition scores recorded for the same EVCs during the field assessments for the WMBD project had an average total habitat score of over 70 out of 100.
Current and future land use	To be confirmed	Site 2 is currently unreserved Crown land. Sites 6 and 11 are private land. Further use and development will need to be excluded from the sites. The following activities are examples of incompatible activities that are or will need to be excluded at the sites: <ul style="list-style-type: none"> • Mountain bike trails – these will need to be buffered out of the offset zones for site 2. • Fuel reduction activities requiring removal of logs or trimming/clearing of understorey plants or trees (boundary buffers could be established for these activities). Low impact strategic firebreaks could be created outside of the offset site to allow for surrounding fire management activities. • Horse riding, cycling or motorised vehicle use of established tracks • Infrastructure easements • Areas identified for other uses that are incompatible with managing the land for native vegetation • Other ongoing land uses that are unlikely to degrade vegetation condition or restrict improvement in vegetation condition.
Existing offsets or other existing arrangements	To be confirmed	The sites would need to meet the following: <ul style="list-style-type: none"> • Not being used to offset other clearance of native vegetation or species habitat required under Victorian or federal legislation. Sites 6 and 11 will need further investigation regarding this. • Not subject to a current agreement or initiative to generate carbon credits. • Not subject to a current agreement under a biodiversity or native vegetation related incentive or grant program.

Criteria (DELWP 2017b)	Criteria met?	Response
Land tenure	For further discussion	<p>Site 2 is unreserved Crown land managed by DELWP FFM. Crown land offset sites must be reserved Crown land and this would require the State Forest to be changed to Forest Park status or to be reserved as a public land tenure where nature conservation is a primary objective.</p> <p>Sites 6 and 11 are private land.</p>
Threats to native vegetation condition	To be confirmed	Current threats at the sites will need to be assessed during the site gain scoring process and will need to be considered manageable through implementation of management actions.
Security	To be confirmed	<p>Existing Crown land (site 2) would be secured as an offset when:</p> <ul style="list-style-type: none"> • The Crown land manager and Secretary of DELWP sign a Crown land offset MOU and, • The Crown land offsets MOU is listed as an encumbrance on the Crown land register. <p>As DELWP is the current land manager of site 2, discussions will be required regarding the establishment of a Crown land MOU or conversion to different public land tenure where nature conservation is the primary objective.</p> <p>Sites 6 and 11 are private land and will be required to agree to and enter into minimum security requirements. This would be a recorded on-title security agreement or transfer freehold land to the Crown.</p>
Minimum management actions	To be confirmed	<p>The minimum management actions to be undertaken at the sites include:</p> <ul style="list-style-type: none"> • Retain all standing trees (dead or alive) • Exclude stock • Control rabbits • Ensure weed cover does not increase beyond the current level • Monitor for any new and emerging high threat weeds and eliminate to <1% cover • Retain leaf litter • Retain logs and fallen timber.
Revegetation	Not applicable	Not applicable
Additional eligibility requirements of Crown land offset sites		
Land status	In progress	<p>In order to be eligible as an offset site on Crown land, the land must be reserved Crown land under an Act such as the <i>Crown Land (Reserves) Act 1978</i> or the <i>National Parks and Wildlife Act 1974</i>. We understand site 2 is currently unreserved Crown land. An amendment to the Crown land reservation status would be required or another mechanism used to achieve an appropriate land status. Discussions with DELWP regarding this process are underway.</p> <p>If the site was to remain State Forest then the most appropriate tenure arrangement would be to establish a Forest Park under Section 50 of the <i>Forest Act 1958</i>.</p>

Criteria (DELWP 2017b)	Criteria met?	Response
Use of the offset site	Yes	<p>An offset site on Crown land can only be used to:</p> <ul style="list-style-type: none"> • Offset clearing on Crown land, or • To provide species offsets that are not available on freehold land <p>Site 2 is proposed to offset clearing on adjacent Crown land and to achieve species habitat unit offsets that are currently unavailable on an established private land offset site via the credit register. Searches of prospective third party sites private land sites has been undertaken here (e.g. sites 6 and 11) and these would need to be established after agreement with the current land owners.</p> <p>No further use and development including development of mountain bike trails can occur within the offset site. Buffers for designed trails 1 and 3 would need to be applied within the offset site zones (up to 10 metres either side of the trails would be considered a sufficient construction and maintenance buffer).</p>

Based on the assessment against DELWP’s offset eligibility criteria, site 2 will require changes to Crown land reservation status and revised management arrangements to meet the eligibility criteria for registration as a Crown land offset site. These matters are to be addressed through discussions between DELWP Natural Environment Program, FFM, Parks Victoria and YRC.

For private land sites 6 and 11, further engagement with the land owners will be required to establish land use history and condition (albeit these sites are likely to be high to moderate quality forest vegetation), willingness to enter into on-title security agreements, commitment to management requirements and agreement to offset site establishment costs and credit purchases.

4 Next steps

4.1 Key considerations

This strategy has identified that sufficient species habitat units are available at several Crown and private land sites. Key considerations for finalising a preferred offset option (i.e. site 2, site 6 or site 11, or some combination of other sites) and proceeding to the site registration stage will need to be resolved in parallel to the EES and project approvals process.

These key considerations are:

- Site 2:
 - Resolution of the Crown land reservation status and decision on security arrangements, or future transfer of the Woiwurrung State Forest to a public land tenure where nature conservation is a primary objective.
 - Condition of native vegetation in Woiwurrung State Forest and management requirements.
 - Whether the site 1 (private land adjacent to site 2) can be transferred to the Crown as part of the changes to Woiwurrung State Forest management and tenure.
 - Negotiating costs associated with offset site assessment, tenure changes, NVCR registration and ongoing management.
 - Confirming parties to the Crown land offset site MOU.
- Sites 6 and 11:
 - Further discussions with private land owners regarding any current encumbrances and willingness to enter into on-tile security agreements and commit to management actions.
 - Condition of native vegetation and management requirements.
 - Costs associated with third party offset site establishment and credit purchases once the site is registered with the NVCR.

4.2 Site assessment and documentation process

A key requirement for registering sites on the NVCR is the development of a *Site Assessment Report* and *Offset Management Plan* using DELWP's standard templates. The purpose of the *Site Assessment Report* is to inform development of a management plan for the credit site and to summarise the attributes of the available credits including the amount of gain, quality of the vegetation, threats and all management issues. The purpose of the *Offset Management Plan* is to outline how offset credit zone(s) are managed over a 10-year active management period to achieve improvement gain commitments, as well as the ongoing land manager commitments for maintenance gain. A land owner agreement (private land) or Crown land MOU also required as part of the registration process.

The following steps would be required to progress this offset strategy to site registration:

- Select preferred offset site after further consultation.
- Finalise eligibility assessments (due diligence) according to Table 4.

- Undertake site assessments to map habitat zones, collect condition scores, estimate large tree densities and document management issues/requirements.
- Progress land tenure changes and transfers for Crown land site.
- Agree of management roles and costs for Crown land site.
- Finalise offset site boundaries and configuration
- Prepare NVCR documentation (*Assessment Report* and *Offset Management Plan* using DELWP's standard templates).
- Prepare land owner agreement (private land) or Crown land MOU.
- Prepare site plans using licenced surveyor.
- Submission of all documentation and gain calculations for DELWP NVCR quality assurance.
- Submission of final documentation and data to the NVCR for registration and allocation of credits to meet the project offset requirements.

4.3 Conclusion

The *Guidelines for the removal, destruction or lopping of native vegetation* require an offset strategy that includes evidence that an offset that meets the offset requirements for any proposed native vegetation removal is available, and explains how the offset will be secured if a permit or approval is granted. Based on the evidence in this strategy, appropriate species habitat units could be generated from any of the three sites identified as the most viable options (i.e. sites 2, 6 and 11). Site 2 would involve establishing a Crown land offset with an appropriate reservation status, or possibly transferring Woivurrung State Forest to a public land tenure where nature conservation is the primary objective. This would be a significant local conservation outcome given the project's residual biodiversity impacts occur on public land in the Warburton area.

The potential offset sites require further land manager/owner discussions and consideration of a range of tenure, security and management issues before being registered and the offsets becoming available. Notwithstanding the ongoing consultation required, this strategy demonstrates that viable offset options exist to achieve a no net loss for the project.

5 References

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Appendix 1 Project impacts – DELWP NVRs for scenario 1 and scenario 2

This report provides information to support an application to remove, destroy or lop native vegetation in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation*. The report is **not an assessment by DELWP** of the proposed native vegetation removal. Native vegetation information and offset requirements have been determined using spatial data provided by the applicant or their consultant.

Date of issue: 07/09/2021

Report ID: BIO_2021_085

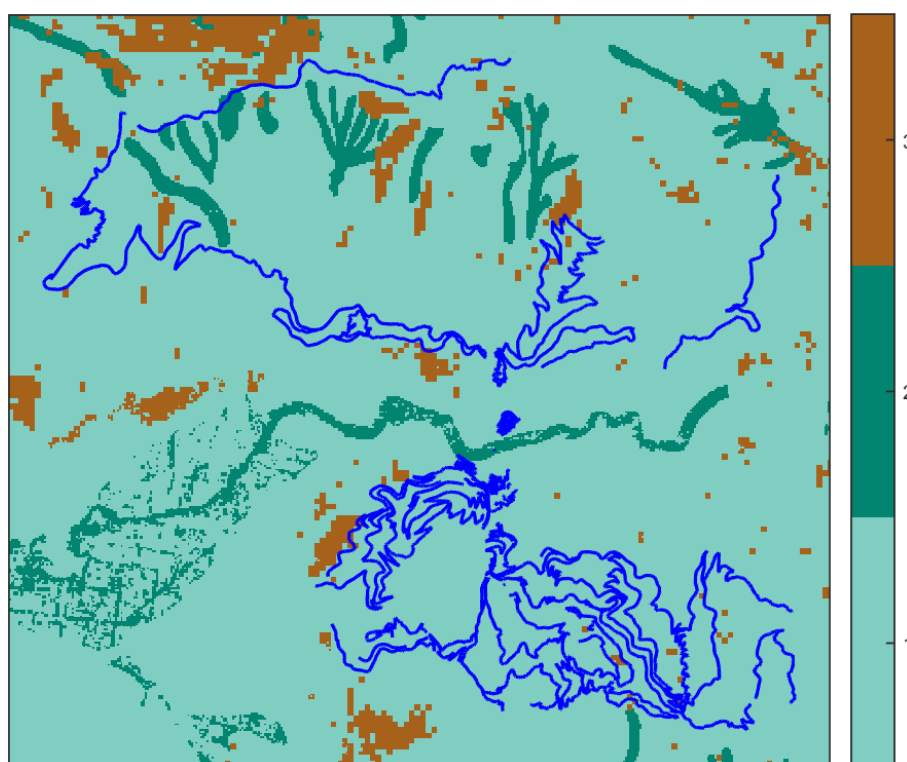
Time of issue: 12:52 am

Project ID	B33805_S1_VegeLoss_GDA94_VicGrid_20210905
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Assessment pathway

Assessment pathway	Detailed Assessment Pathway
Extent including past and proposed	37.047 ha
Extent of past removal	0.000 ha
Extent of proposed removal	37.047 ha
No. Large trees proposed to be removed	0
Location category of proposed removal	Location 3 The native vegetation is in an area where the removal of less than 0.5 hectares could have a significant impact on habitat for one or more rare or threatened species. The native vegetation is also in an area mapped as an endangered Ecological Vegetation Class (as per the statewide EVC map); and a wetland listed in the Directory of Important Wetlands of Australia.

1. Location map



Total offset requirements if a permit is granted

Any approval granted will include a condition to obtain an offset that meets the following requirements:

Species offset amount¹	<p>21.107 species units of habitat for Leadbeater's Possum, <i>Gymnobelideus leadbeateri</i></p> <p>20.684 species units of habitat for Smoky Mouse, <i>Pseudomys fumeus</i></p> <p>19.073 species units of habitat for Tall Astelia, <i>Astelia australiana</i></p> <p>25.214 species units of habitat for Brickmaker's Sedge, <i>Gahnia grandis</i></p> <p>26.076 species units of habitat for Nunniong Everlasting, <i>Ozothamnus rogersianus</i></p> <p>20.620 species units of habitat for Jungle Bristle-fern, <i>Cephalomanes caudatum</i></p> <p>19.885 species units of habitat for Tree Geebung, <i>Persoonia arborea</i></p> <p>26.023 species units of habitat for Long Pink-bells, <i>Tetratheca stenocarpa</i></p> <p>15.210 species units of habitat for Fairy Lanterns, <i>Thismia rodwayi</i></p> <p>9.342 species units of habitat for Mountain Bird-orchid, <i>Chiloglottis jeanesii</i></p> <p>25.858 species units of habitat for Powelltown Correa, <i>Correa reflexa var. lobata</i></p> <p>23.128 species units of habitat for Toothed Leionema, <i>Leionema bilobum subsp. serrulatum</i></p> <p>11.417 species units of habitat for White Star-bush, <i>Asterolasia asteriscophora subsp. albiflora</i></p>
Large trees	0 trees

NB: values within tables in this document may not add to the totals shown above due to rounding

Appendix 1 includes information about the native vegetation to be removed

Appendix 2 includes information about the rare or threatened species mapped at the site.

Appendix 3 includes maps showing native vegetation to be removed and extracts of relevant species habitat importance maps

¹ The species offset amount(s) required is the sum of all species habitat units in Appendix 1.

Offset requirements if a permit is granted – Stage 1

Any approval granted will include a condition to obtain an offset that meets the following requirements:

Species offset amount	<p>12.885 species units of habitat for Leadbeater's Possum, <i>Gymnobelideus leadbeateri</i></p> <p>13.543 species units of habitat for Smoky Mouse, <i>Pseudomys fumeus</i></p> <p>11.559 species units of habitat for Tall Astelia, <i>Astelia australiana</i></p> <p>16.588 species units of habitat for Brickmaker's Sedge, <i>Gahnia grandis</i></p> <p>17.081 species units of habitat for Nunniong Everlasting, <i>Ozothamnus rogersianus</i></p> <p>12.629 species units of habitat for Jungle Bristle-fern, <i>Cephalomanes caudatum</i></p> <p>11.839 species units of habitat for Tree Geebung, <i>Persoonia arborea</i></p> <p>17.082 species units of habitat for Long Pink-bells, <i>Tetratheca stenocarpa</i></p> <p>8.515 species units of habitat for Fairy Lanterns, <i>Thismia rodwayi</i></p> <p>6.479 species units of habitat for Mountain Bird-orchid, <i>Chiloglottis jeansii</i></p> <p>17.083 species units of habitat for Powelltown Correa, <i>Correa reflexa</i> var. <i>lobata</i></p> <p>14.989 species units of habitat for Toothed Leionema, <i>Leionema bilobum</i> subsp. <i>serrulatum</i></p> <p>6.826 species units of habitat for White Star-bush, <i>Asterolasia asteriscophora</i> subsp. <i>albiflora</i></p>
Large trees	0 trees

Offset requirements if a permit is granted – Stage 2

Any approval granted will include a condition to obtain an offset that meets the following requirements:

Species offset amount	<p>8.222 species units of habitat for Leadbeater's Possum, <i>Gymnobelideus leadbeateri</i></p> <p>7.141 species units of habitat for Smoky Mouse, <i>Pseudomys fumeus</i></p> <p>7.514 species units of habitat for Tall Astelia, <i>Astelia australiana</i></p> <p>8.626 species units of habitat for Brickmaker's Sedge, <i>Gahnia grandis</i></p> <p>8.995 species units of habitat for Nunniong Everlasting, <i>Ozothamnus rogersianus</i></p> <p>7.991 species units of habitat for Jungle Bristle-fern, <i>Cephalomanes caudatum</i></p> <p>8.046 species units of habitat for Tree Geebung, <i>Persoonia arborea</i></p> <p>8.941 species units of habitat for Long Pink-bells, <i>Tetratheca stenocarpa</i></p> <p>6.695 species units of habitat for Fairy Lanterns, <i>Thismia rodwayi</i></p> <p>2.863 species units of habitat for Mountain Bird-orchid, <i>Chiloglottis jeansii</i></p> <p>8.775 species units of habitat for Powelltown Correa, <i>Correa reflexa</i> var. <i>lobata</i></p> <p>8.139 species units of habitat for Toothed Leionema, <i>Leionema bilobum</i> subsp. <i>serrulatum</i></p> <p>4.591 species units of habitat for White Star-bush, <i>Asterolasia asteriscophora</i> subsp. <i>albiflora</i></p>
Large trees	0 trees

Next steps

Any proposal to remove native vegetation must meet the application requirements of the Detailed Assessment Pathway and it will be assessed under the Detailed Assessment Pathway.

If you wish to remove the mapped native vegetation you are required to apply for a permit from your local council. Council will refer your application to DELWP for assessment, as required. **This report is not a referral assessment by DELWP.**

This *Native vegetation removal report* must be submitted with your application for a permit to remove, destroy or lop native vegetation.

Refer to the *Guidelines for the removal, destruction or lopping of native vegetation* (the Guidelines) for a full list of application requirements. This report provides information that meets the following application requirements:

- The assessment pathway and reason for the assessment pathway
- A description of the native vegetation to be removed (partly met)
- Maps showing the native vegetation and property (partly met)
- Information about the impacts on rare or threatened species.
- The offset requirements determined in accordance with section 5 of the Guidelines that apply if approval is granted to remove native vegetation.

Additional application requirements must be met including:

- Topographical and land information
- Recent dated photographs
- Details of past native vegetation removal
- An avoid and minimise statement
- A copy of any Property Vegetation Plan that applies
- A defensible space statement as applicable
- A statement about the Native Vegetation Precinct Plan as applicable
- A site assessment report including a habitat hectare assessment of any patches of native vegetation and details of trees
- An offset statement that explains that an offset has been identified and how it will be secured.

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Notwithstanding anything else contained in this publication, you must ensure that you comply with all relevant laws, legislation, awards or orders and that you obtain and comply with all permits, approvals and the like that affect, are applicable or are necessary to undertake any action to remove, lop or destroy or otherwise deal with any native vegetation or that apply to matters within the scope of Clauses 52.16 or 52.17 of the Victoria Planning Provisions and Victorian planning schemes.

Appendix 1: Description of native vegetation to be removed

The species-general offset test was applied to your proposal. This test determines if the proposed removal of native vegetation has a proportional impact on any rare or threatened species habitats above the species offset threshold. The threshold is set at 0.005 per cent of the mapped habitat value for a species. When the proportional impact is above the species offset threshold a species offset is required. This test is done for all species mapped at the site. Multiple species offsets will be required if the species offset threshold is exceeded for multiple species.

Where a zone requires species offset(s), the species habitat units for each species in that zone is calculated by the following equation in accordance with the Guidelines:

$$\text{Species habitat units} = \text{extent} \times \text{condition} \times \text{species landscape factor} \times 2, \text{ where the species landscape factor} = 0.5 + (\text{habitat importance score}/2)$$

The species offset amount(s) required is the sum of all species habitat units per zone

Where a zone does not require a species offset, the general habitat units in that zone is calculated by the following equation in accordance with the Guidelines:

$$\text{General habitat units} = \text{extent} \times \text{condition} \times \text{general landscape factor} \times 1.5, \text{ where the general landscape factor} = 0.5 + (\text{strategic biodiversity value score}/2)$$

The general offset amount required is the sum of all general habitat units per zone.

Native vegetation to be removed

Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Information provided by or on behalf of the applicant in a GIS file			Information calculated by EnSym					
					Partial removal	Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type	

Refer to accompanying Excel spreadsheet, which must be included with this report in any application – 'Native Veg to be removed' tab

Appendix 2: Information about impacts to rare or threatened species' habitats on site

This table lists all rare or threatened species' habitats mapped at the site.

Species common name	Species scientific name	Species number	Conservation status	Group	Habitat impacted	% habitat value affected

Refer to accompanying Excel spreadsheet, which must be included with this report in any application – 'Impacts on VROTS habitat' tab

Habitat group

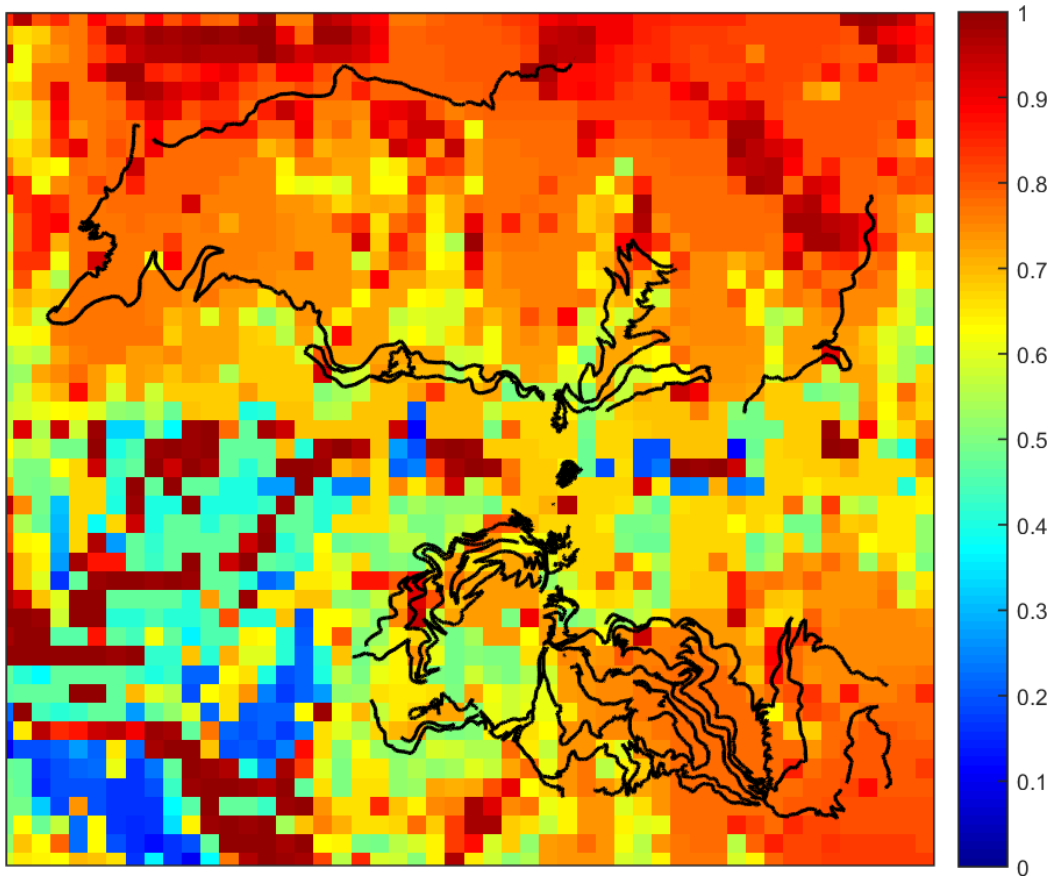
- Highly localised habitat means there is 2000 hectares or less mapped habitat for the species
- Dispersed habitat means there is more than 2000 hectares of mapped habitat for the species

Habitat impacted

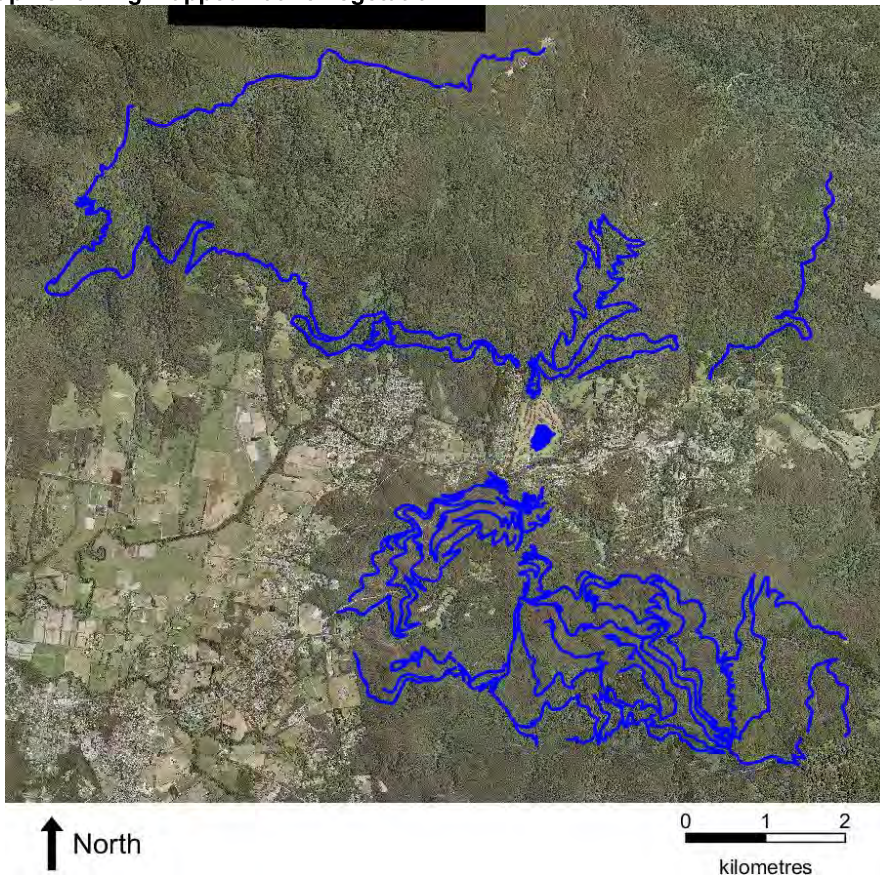
- Habitat importance maps are the maps defined in the Guidelines that include all the mapped habitat for a rare or threatened species
- Top ranking maps are the maps defined in the Guidelines that depict the important areas of a dispersed species habitat, developed from the highest habitat importance scores in dispersed species habitat maps and selected VBA records
- Selected VBA record is an area in Victoria that represents a large population, roosting or breeding site etc.

Appendix 3 – Images of mapped native vegetation

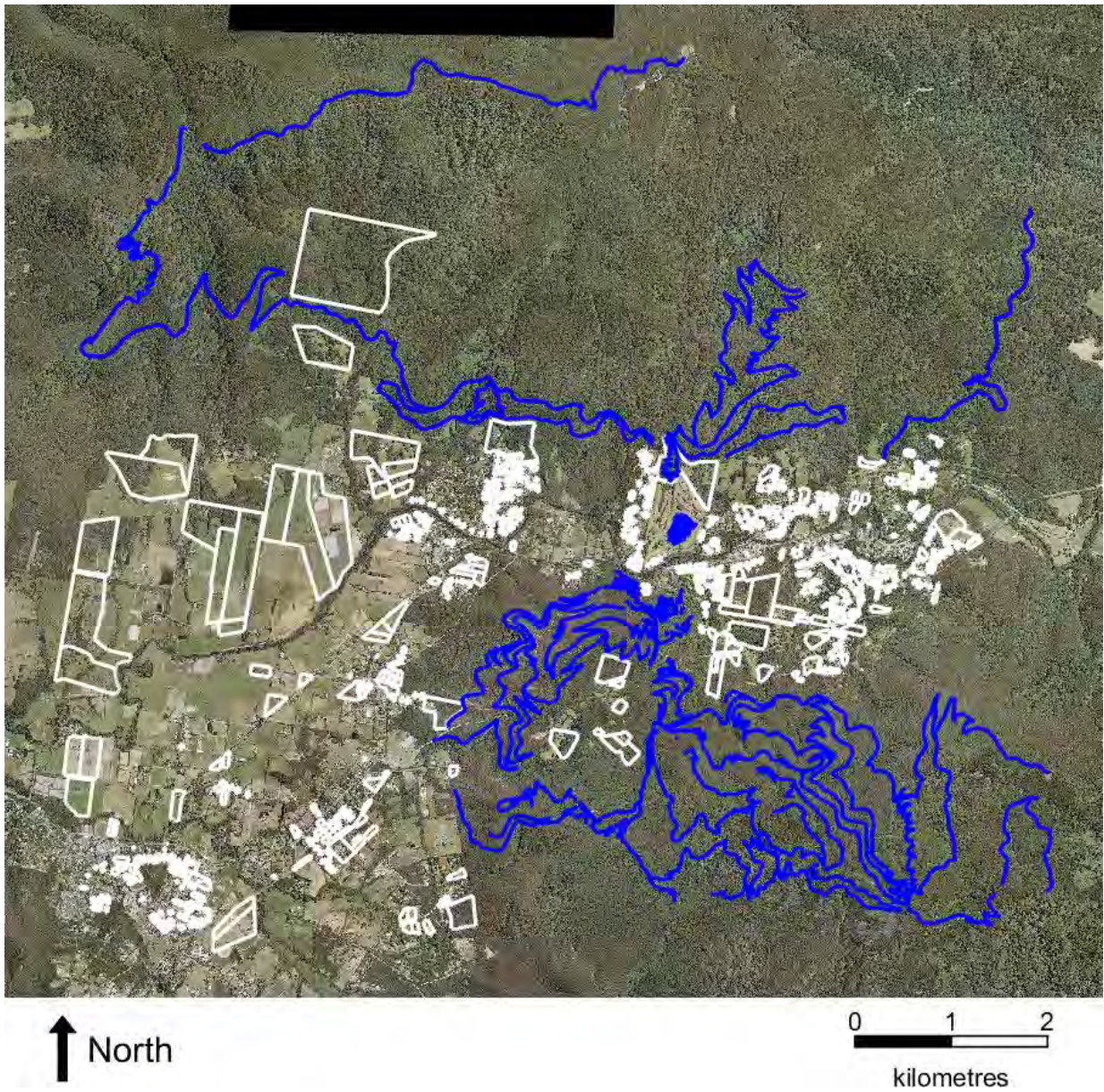
2. Strategic biodiversity values map



3. Aerial photograph showing mapped native vegetation



4. Map of the property in context



Yellow boundaries denote areas of proposed native vegetation removal.

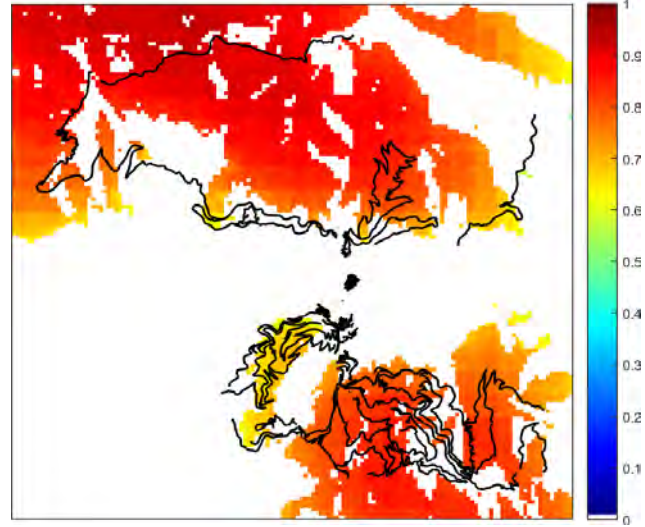
Blue boundaries denote zones of partial removal with a halved condition score.

4. Habitat importance maps

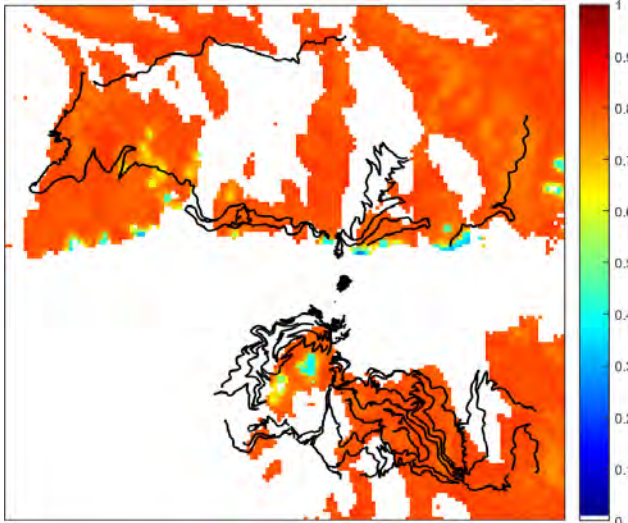
Leadbeater's Possum
Gymnobelideus leadbeateri
11141



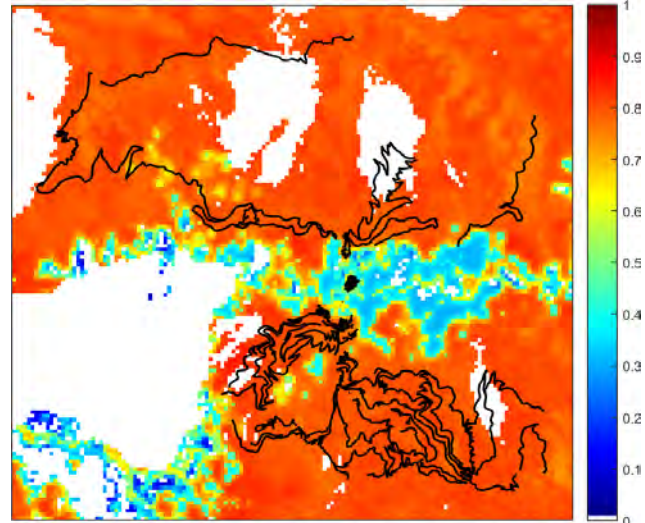
Smoky Mouse
Pseudomys fumeus
11458



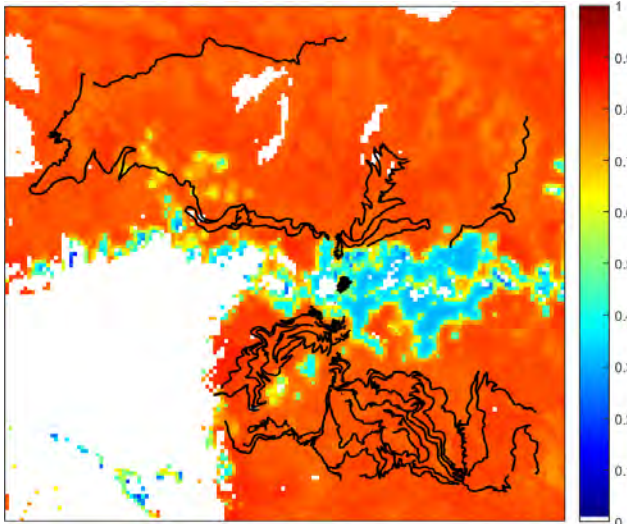
Tall Astelia
Astelia australiana
500296



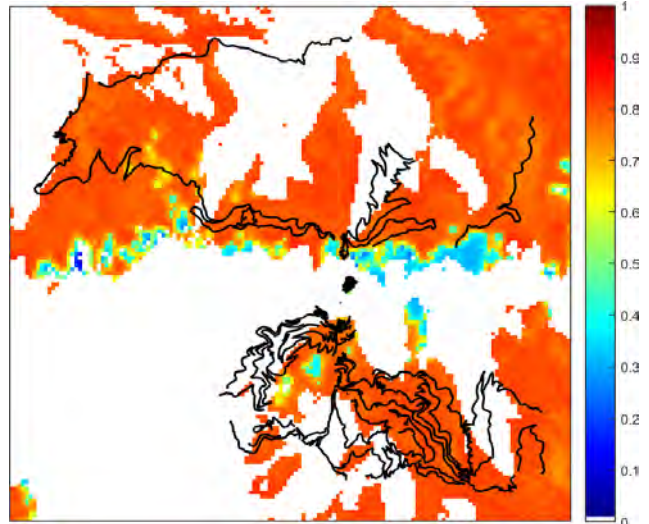
Brickmaker's Sedge
Gahnia grandis
501390



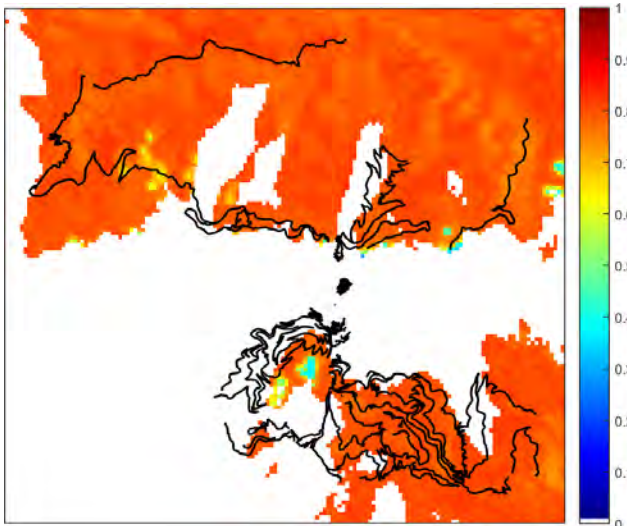
Nunniang Everlasting
Ozothamnus rogersianus
501623



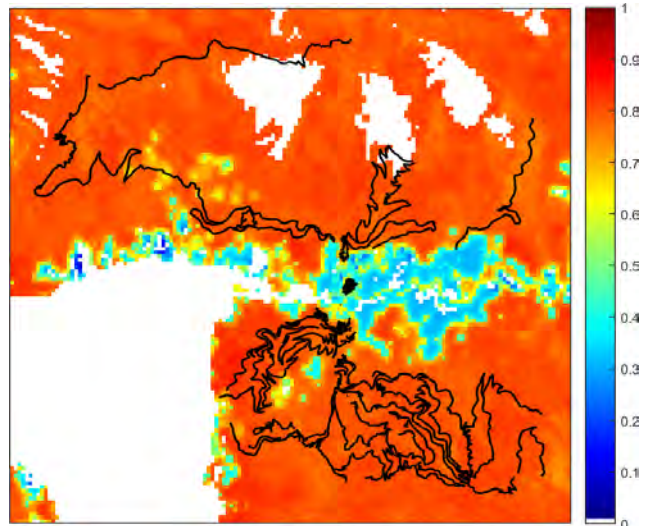
Jungle Bristle-fern
Cephalomanes caudatum
502094



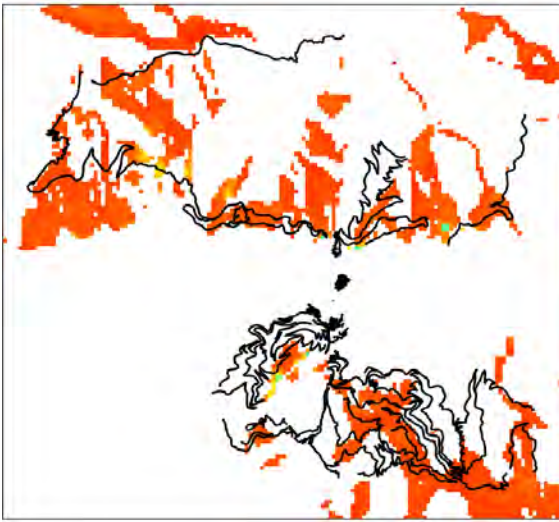
Tree Geebung
Persoonia arborea
502459



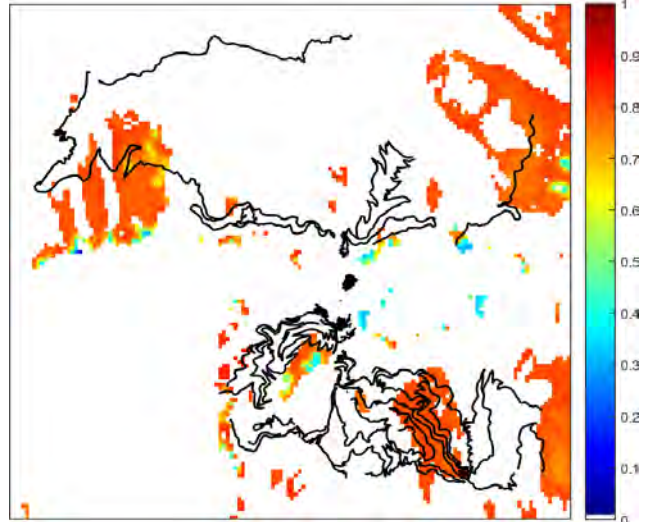
Long Pink-bells
Tetratheca stenocarpa
503354



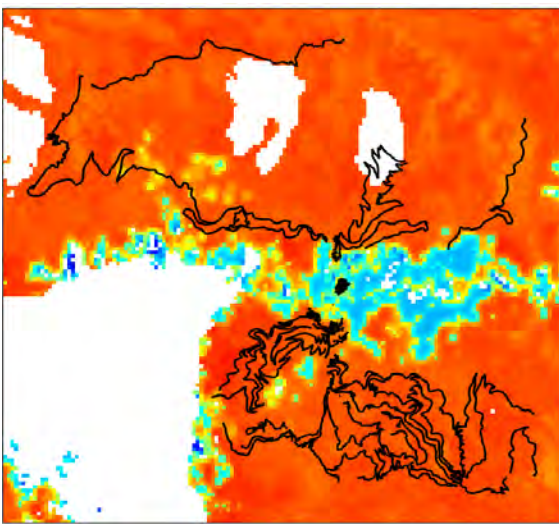
Fairy Lanterns
Thismia rodwayi
503390



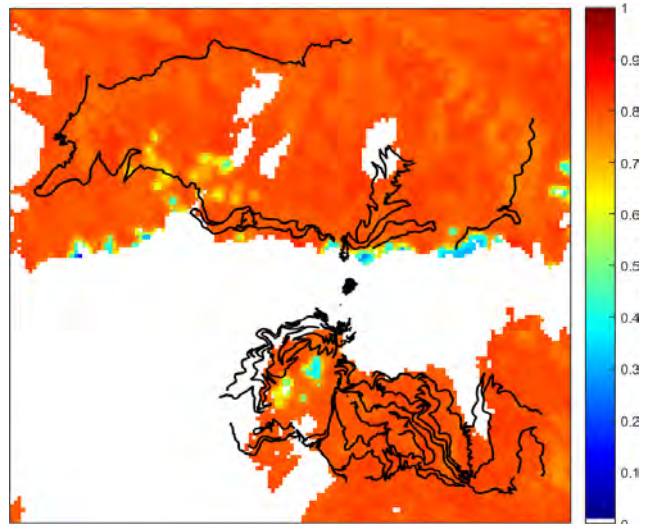
Mountain Bird-orchid
Chiloglottis jeanesii
504499



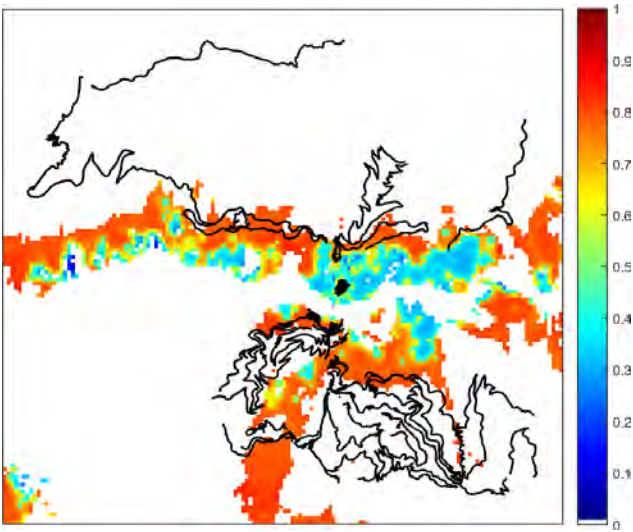
Powelltown Correa
Correa reflexa var. *lobata*
505404



Toothed Leonema
Leonema bilobum subsp. *serrulatum*
505480



White Star-bush
Asterolasia asteriscophora subsp. *albiflora*
505647



This report provides information to support an application to remove, destroy or lop native vegetation in accordance with the *Guidelines for the removal, destruction or lopping of native vegetation*. The report is **not an assessment by DELWP** of the proposed native vegetation removal. Native vegetation information and offset requirements have been determined using spatial data provided by the applicant or their consultant.

Date of issue: 07/09/2021

Report ID: BIO_2021_086

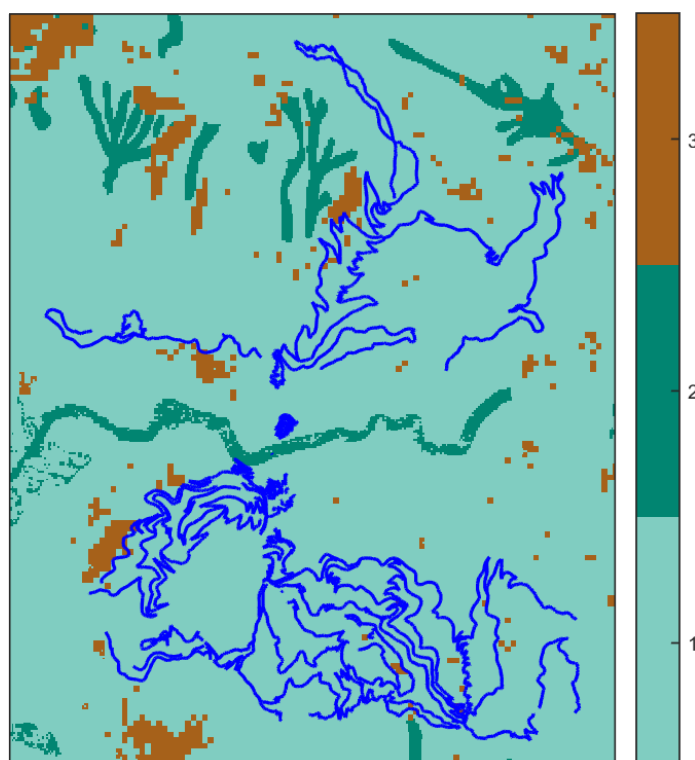
Time of issue: 6:28 pm

Project ID	B33805_S2_VegeLoss_GDA94_VicGrid_20210905
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Assessment pathway

Assessment pathway	Detailed Assessment Pathway
Extent including past and proposed	35.754 ha
Extent of past removal	0.000 ha
Extent of proposed removal	35.754 ha
No. Large trees proposed to be removed	0
Location category of proposed removal	Location 3 The native vegetation is in an area where the removal of less than 0.5 hectares could have a significant impact on habitat for one or more rare or threatened species. The native vegetation is also in an area mapped as a wetland listed in the Directory of Important Wetlands of Australia.

1. Location map



Total offset requirements if a permit is granted

Any approval granted will include a condition to obtain an offset that meets the following requirements:

Species offset amount¹	<p>19.410 species units of habitat for Smoky Mouse, <i>Pseudomys fumeus</i></p> <p>18.027 species units of habitat for Tall Astelia, <i>Astelia australiana</i></p> <p>24.584 species units of habitat for Brickmaker's Sedge, <i>Gahnia grandis</i></p> <p>25.342 species units of habitat for Nunningong Everlasting, <i>Ozothamnus rogersianus</i></p> <p>19.387 species units of habitat for Jungle Bristle-fern, <i>Cephalomanes caudatum</i></p> <p>19.182 species units of habitat for Tree Geebung, <i>Persoonia arborea</i></p> <p>25.345 species units of habitat for Long Pink-bells, <i>Tetralochea stenocarpa</i></p> <p>13.528 species units of habitat for Fairy Lanterns, <i>Thismia rodwayi</i></p> <p>8.830 species units of habitat for Mountain Bird-orchid, <i>Chiloglottis jeansii</i></p> <p>25.125 species units of habitat for Powelltown Correa, <i>Correa reflexa var. lobata</i></p> <p>22.394 species units of habitat for Toothed Leionema, <i>Leionema bilobum subsp. serrulatum</i></p> <p>10.430 species units of habitat for White Star-bush, <i>Asterolasia asteriscophora subsp. albiflora</i></p> <p>8.503 species units of habitat for Wavy Fork-moss, <i>Dicranoloma platycaulon</i></p>
Large trees	0 trees

NB: values within tables in this document may not add to the totals shown above due to rounding

Appendix 1 includes information about the native vegetation to be removed

Appendix 2 includes information about the rare or threatened species mapped at the site.

Appendix 3 includes maps showing native vegetation to be removed and extracts of relevant species habitat importance maps

¹ The species offset amount(s) required is the sum of all species habitat units in Appendix 1.

Offset requirements if a permit is granted – Stage 1

Any approval granted will include a condition to obtain an offset that meets the following requirements:

Species offset amount	<p>13.542 species units of habitat for Smoky Mouse, <i>Pseudomys fumeus</i></p> <p>11.558 species units of habitat for Tall Astelia, <i>Astelia australiana</i></p> <p>16.588 species units of habitat for Brickmaker's Sedge, <i>Gahnia grandis</i></p> <p>17.081 species units of habitat for Nunniong Everlasting, <i>Ozothamnus rogersianus</i></p> <p>12.628 species units of habitat for Jungle Bristle-fern, <i>Cephalomanes caudatum</i></p> <p>11.840 species units of habitat for Tree Geebung, <i>Persoonia arborea</i></p> <p>17.082 species units of habitat for Long Pink-bells, <i>Tetratheca stenocarpa</i></p> <p>8.515 species units of habitat for Fairy Lanterns, <i>Thismia rodwayi</i></p> <p>6.480 species units of habitat for Mountain Bird-orchid, <i>Chiloglottis jeansii</i></p> <p>17.082 species units of habitat for Powelltown Correa, <i>Correa reflexa var. lobata</i></p> <p>14.989 species units of habitat for Toothed Leionema, <i>Leionema bilobum subsp. serrulatum</i></p> <p>6.826 species units of habitat for White Star-bush, <i>Asterolasia asteriscophora subsp. albiflora</i></p> <p>4.715 species units of habitat for Wavy Fork-moss, <i>Dicranoloma platycaulon</i></p>
Large trees	0 trees

Offset requirements if a permit is granted – Stage 2

Any approval granted will include a condition to obtain an offset that meets the following requirements:

Species offset amount	<p>5.868 species units of habitat for Smoky Mouse, <i>Pseudomys fumeus</i></p> <p>6.469 species units of habitat for Tall Astelia, <i>Astelia australiana</i></p> <p>7.996 species units of habitat for Brickmaker's Sedge, <i>Gahnia grandis</i></p> <p>8.261 species units of habitat for Nunniong Everlasting, <i>Ozothamnus rogersianus</i></p> <p>6.759 species units of habitat for Jungle Bristle-fern, <i>Cephalomanes caudatum</i></p> <p>7.342 species units of habitat for Tree Geebung, <i>Persoonia arborea</i></p> <p>8.263 species units of habitat for Long Pink-bells, <i>Tetratheca stenocarpa</i></p> <p>5.013 species units of habitat for Fairy Lanterns, <i>Thismia rodwayi</i></p> <p>2.350 species units of habitat for Mountain Bird-orchid, <i>Chiloglottis jeansii</i></p> <p>8.043 species units of habitat for Powelltown Correa, <i>Correa reflexa var. lobata</i></p> <p>7.405 species units of habitat for Toothed Leionema, <i>Leionema bilobum subsp. serrulatum</i></p> <p>3.604 species units of habitat for White Star-bush, <i>Asterolasia asteriscophora subsp. albiflora</i></p> <p>3.788 species units of habitat for Wavy Fork-moss, <i>Dicranoloma platycaulon</i></p>
Large trees	0 trees

Next steps

Any proposal to remove native vegetation must meet the application requirements of the Detailed Assessment Pathway and it will be assessed under the Detailed Assessment Pathway.

If you wish to remove the mapped native vegetation you are required to apply for a permit from your local council. Council will refer your application to DELWP for assessment, as required. **This report is not a referral assessment by DELWP.**

This *Native vegetation removal report* must be submitted with your application for a permit to remove, destroy or lop native vegetation.

Refer to the *Guidelines for the removal, destruction or lopping of native vegetation* (the Guidelines) for a full list of application requirements. This report provides information that meets the following application requirements:

- The assessment pathway and reason for the assessment pathway
- A description of the native vegetation to be removed (partly met)
- Maps showing the native vegetation and property (partly met)
- Information about the impacts on rare or threatened species.
- The offset requirements determined in accordance with section 5 of the Guidelines that apply if approval is granted to remove native vegetation.

Additional application requirements must be met including:

- Topographical and land information
- Recent dated photographs
- Details of past native vegetation removal
- An avoid and minimise statement
- A copy of any Property Vegetation Plan that applies
- A defensible space statement as applicable
- A statement about the Native Vegetation Precinct Plan as applicable
- A site assessment report including a habitat hectare assessment of any patches of native vegetation and details of trees
- An offset statement that explains that an offset has been identified and how it will be secured.

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Authorised by the Victorian Government, 8 Nicholson Street, East Melbourne.

For more information contact the DELWP Customer Service Centre 136 186

www.delwp.vic.gov.au

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Obtaining this publication does not guarantee that an application will meet the requirements of Clauses 52.16 or 52.17 of the Victoria Planning Provisions and Victorian planning schemes or that a permit to remove native vegetation will be granted.

Notwithstanding anything else contained in this publication, you must ensure that you comply with all relevant laws, legislation, awards or orders and that you obtain and comply with all permits, approvals and the like that affect, are applicable or are necessary to undertake any action to remove, lop or destroy or otherwise deal with any native vegetation or that apply to matters within the scope of Clauses 52.16 or 52.17 of the Victoria Planning Provisions and Victorian planning schemes.

Appendix 1: Description of native vegetation to be removed

The species-general offset test was applied to your proposal. This test determines if the proposed removal of native vegetation has a proportional impact on any rare or threatened species habitats above the species offset threshold. The threshold is set at 0.005 per cent of the mapped habitat value for a species. When the proportional impact is above the species offset threshold a species offset is required. This test is done for all species mapped at the site. Multiple species offsets will be required if the species offset threshold is exceeded for multiple species.

Where a zone requires species offset(s), the species habitat units for each species in that zone is calculated by the following equation in accordance with the Guidelines:

$$\text{Species habitat units} = \text{extent} \times \text{condition} \times \text{species landscape factor} \times 2, \text{ where the species landscape factor} = 0.5 + (\text{habitat importance score}/2)$$

The species offset amount(s) required is the sum of all species habitat units per zone

Where a zone does not require a species offset, the general habitat units in that zone is calculated by the following equation in accordance with the Guidelines:

$$\text{General habitat units} = \text{extent} \times \text{condition} \times \text{general landscape factor} \times 1.5, \text{ where the general landscape factor} = 0.5 + (\text{strategic biodiversity value score}/2)$$

The general offset amount required is the sum of all general habitat units per zone.

Native vegetation to be removed

Zone	Type	BioEVC	BioEVC conservation status	Large tree(s)	Partial removal	Information provided by or on behalf of the applicant in a GIS file			Information calculated by EnSym					
						Condition score	Polygon Extent	Extent without overlap	SBV score	HI score	Habitat units	Offset type		

Refer to accompanying Excel spreadsheet, which must be included with this report in any application – 'Native Veg to be removed' tab

Appendix 2: Information about impacts to rare or threatened species' habitats on site

This table lists all rare or threatened species' habitats mapped at the site.

Species common name	Species scientific name	Species number	Conservation status	Group	Habitat impacted	% habitat value affected
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Refer to accompanying Excel spreadsheet, which must be included with this report in any application – 'Impacts on VROTS habitat' tab

Habitat group

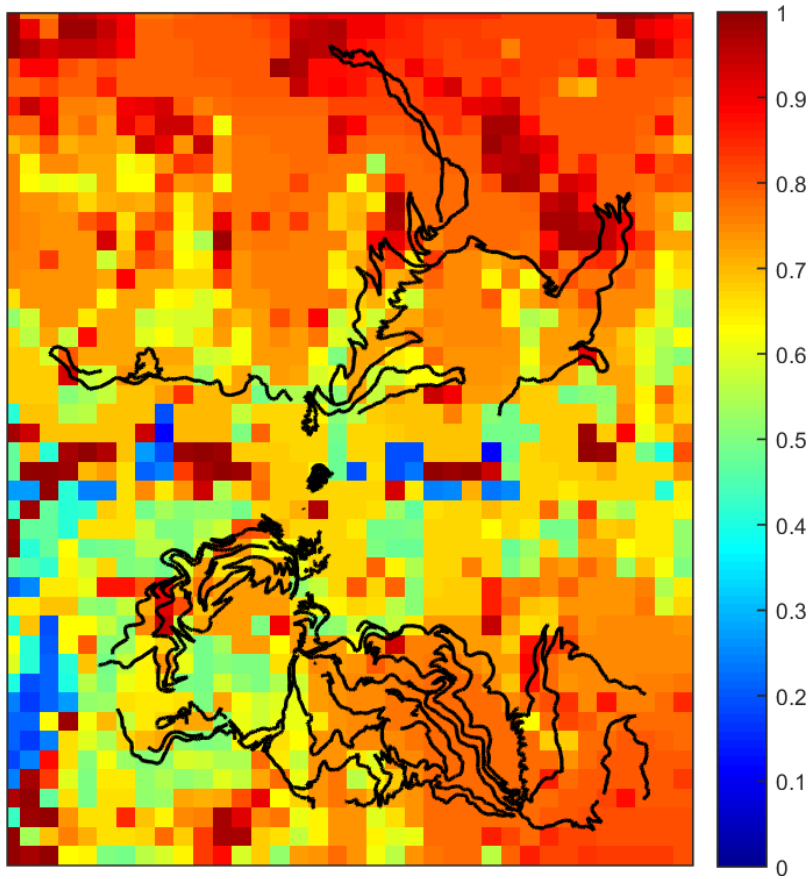
- Highly localised habitat means there is 2000 hectares or less mapped habitat for the species
- Dispersed habitat means there is more than 2000 hectares of mapped habitat for the species

Habitat impacted

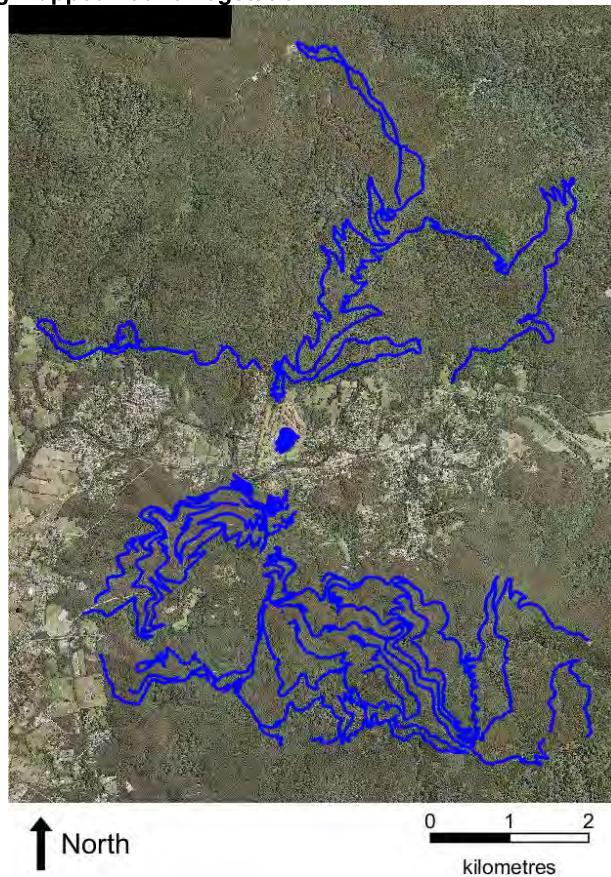
- Habitat importance maps are the maps defined in the Guidelines that include all the mapped habitat for a rare or threatened species
- Top ranking maps are the maps defined in the Guidelines that depict the important areas of a dispersed species habitat, developed from the highest habitat importance scores in dispersed species habitat maps and selected VBA records
- Selected VBA record is an area in Victoria that represents a large population, roosting or breeding site etc.

Appendix 3 – Images of mapped native vegetation

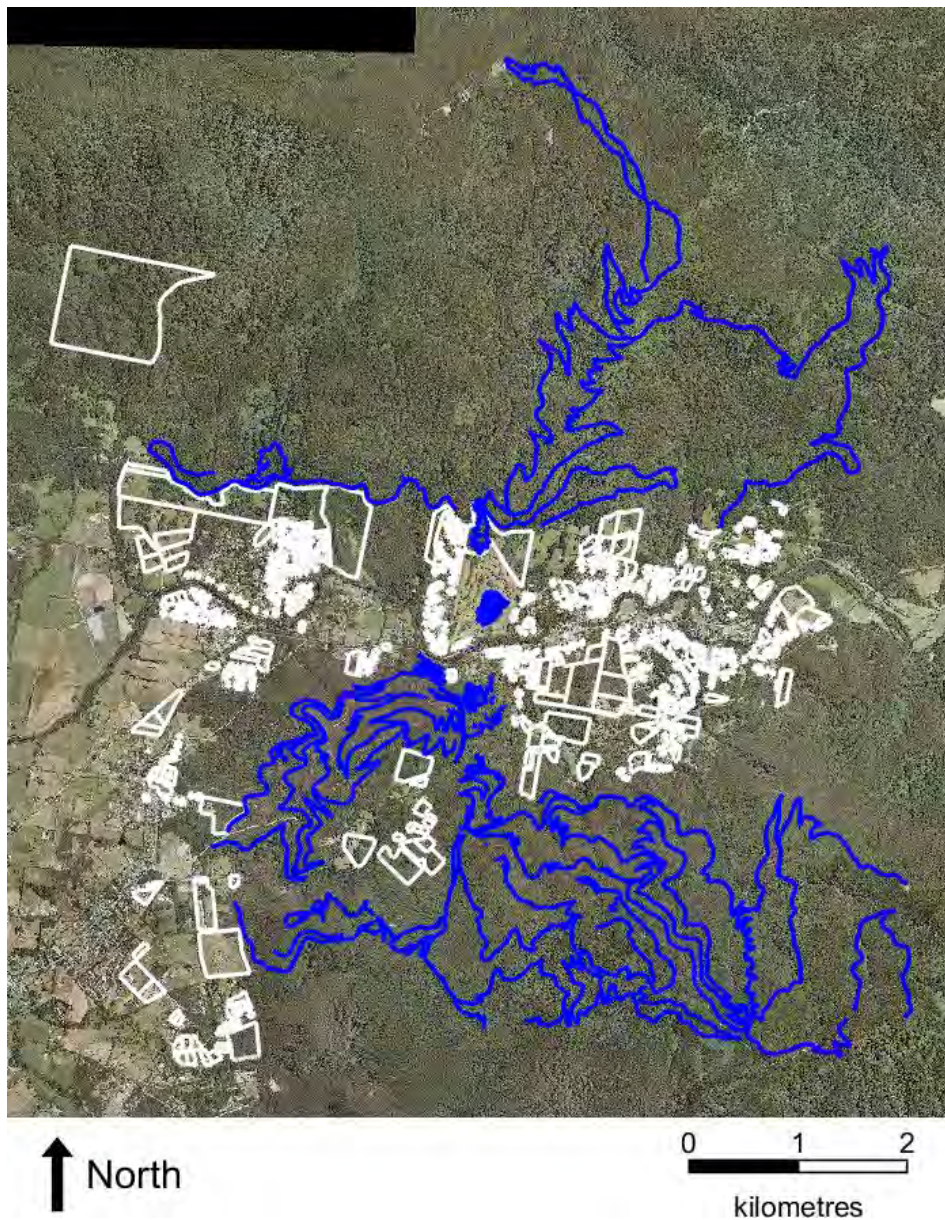
2. Strategic biodiversity values map



3. Aerial photograph showing mapped native vegetation



4. Map of the property in context

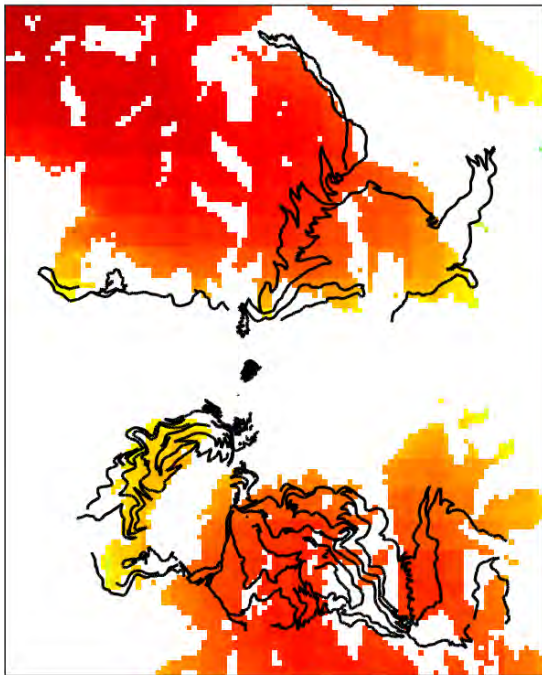


Yellow boundaries denote areas of proposed native vegetation removal.

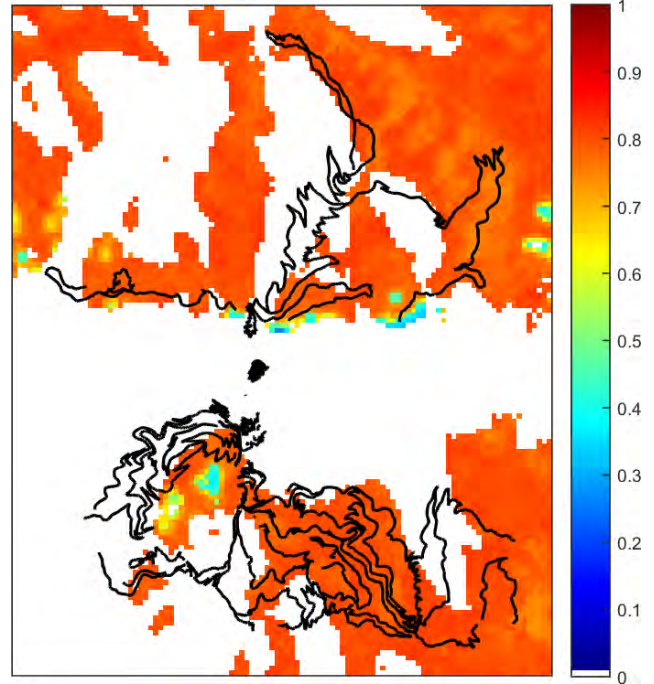
Blue boundaries denote zones of partial removal with a halved condition score.

4. Habitat importance maps

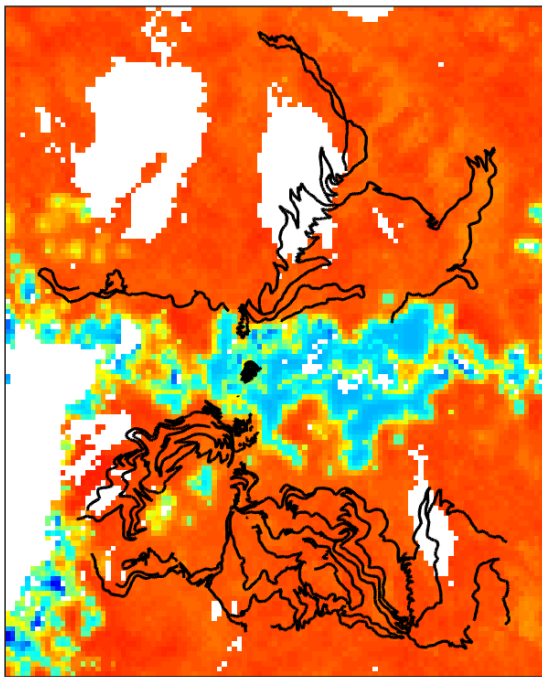
Smoky Mouse
Pseudomys fumeus
11458



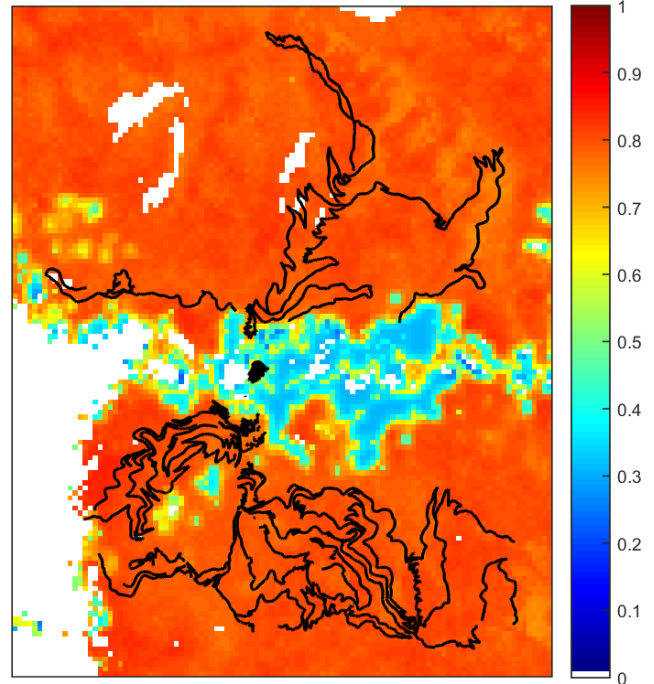
Tall Astelia
Astelia australiana
500296



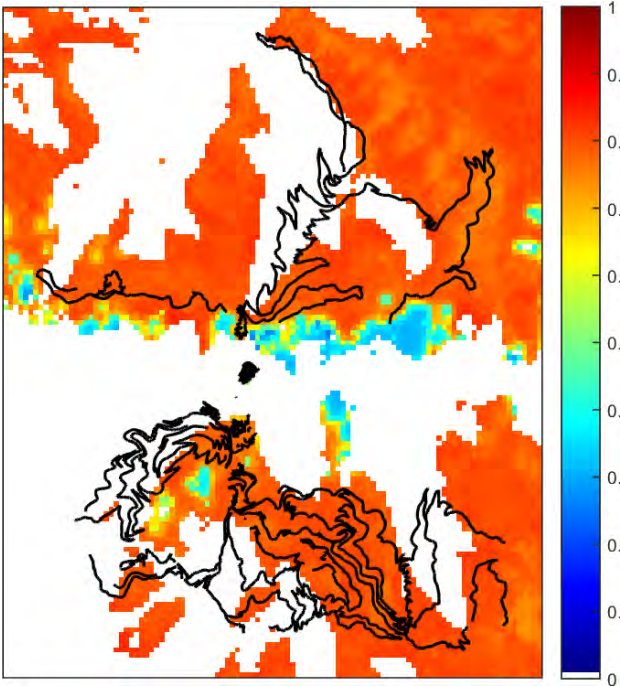
Brickmaker's Sedge
Gahnia grandis
501390



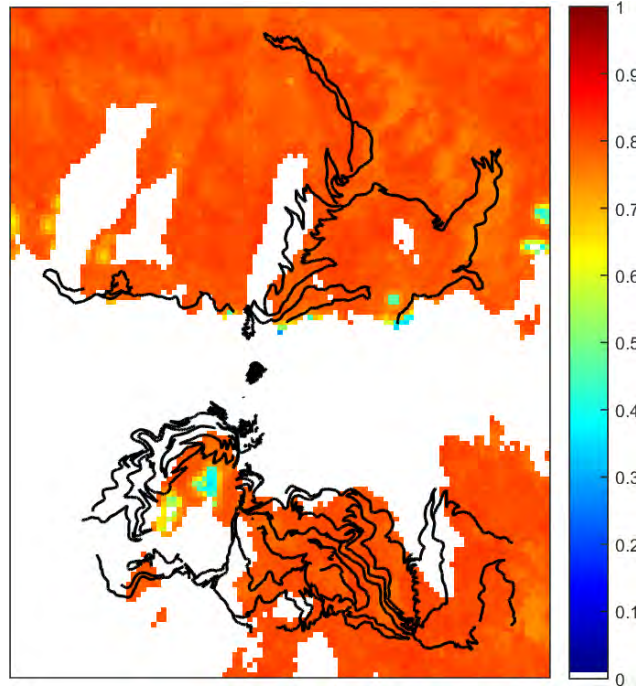
Nunniong Everlasting
Ozothamnus rogersianus
501623



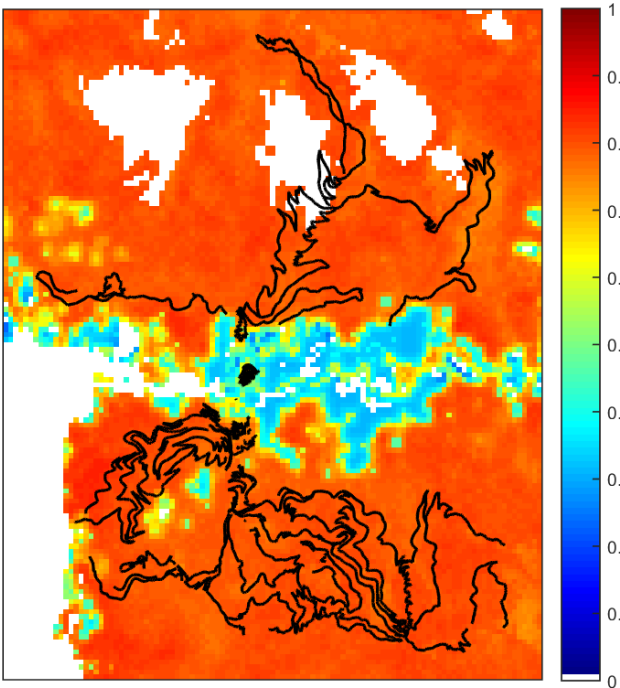
Jungle Bristle-fern
Cephalomanes caudatum
502094



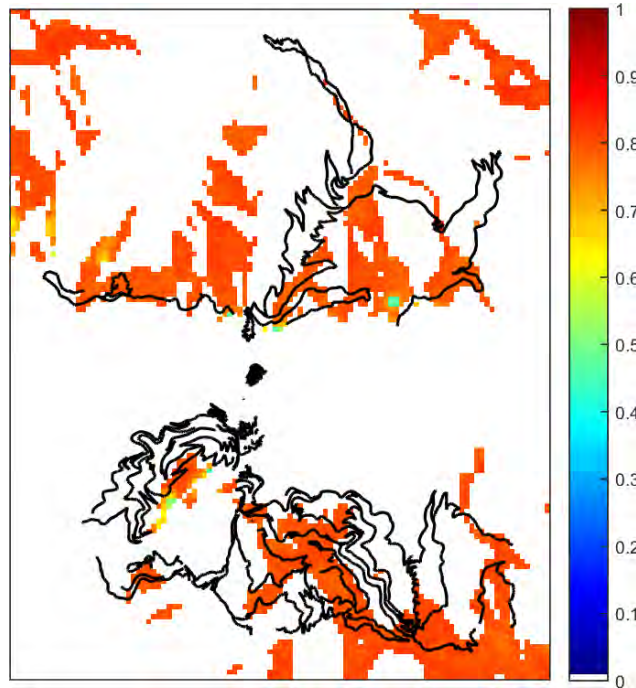
Tree Geebung
Persoonia arborea
502459



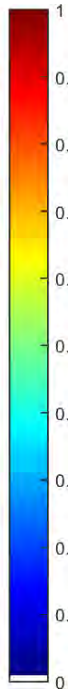
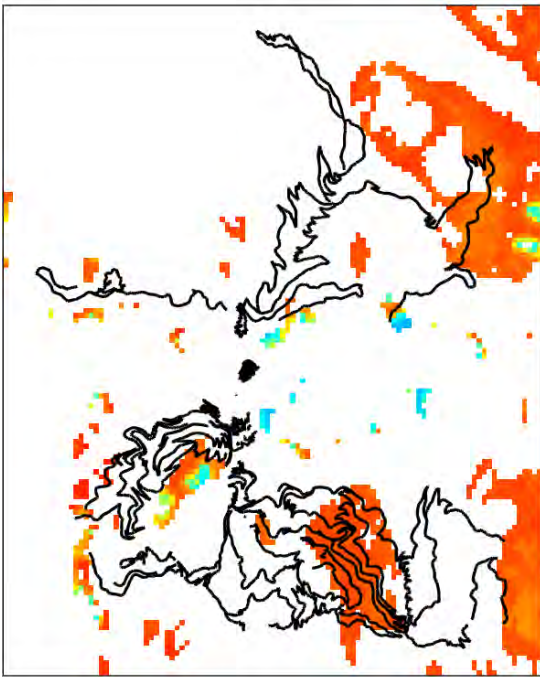
Long Pink-bells
Tetratheca stenocarpa
503354



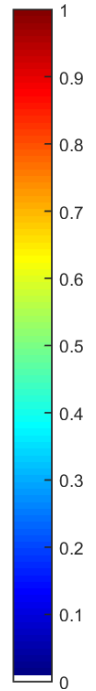
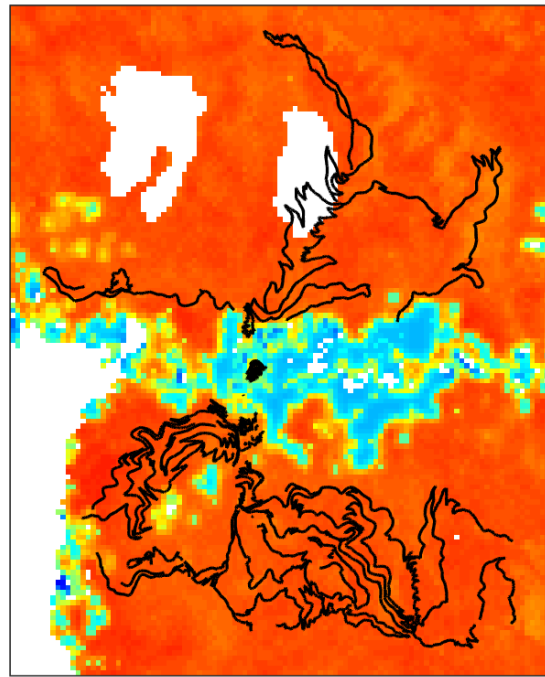
Fairy Lanterns
Thismia rodwayi
503390



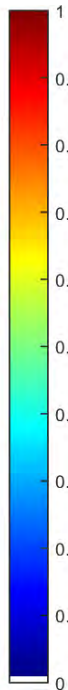
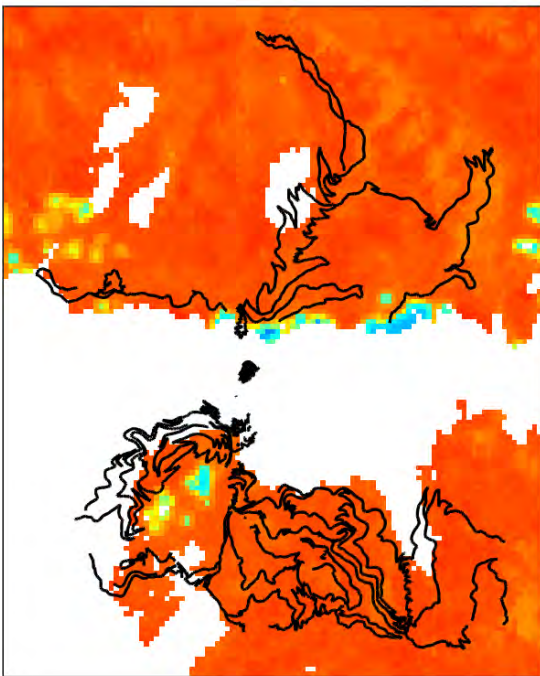
Mountain Bird-orchid
Chiloglottis jeansii
504499



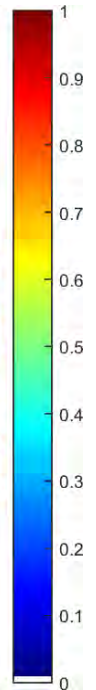
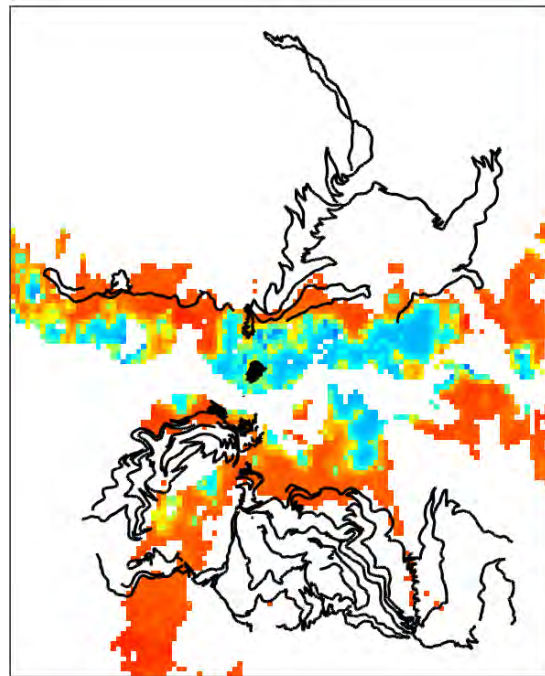
Powelltown Correa
Correa reflexa var. *lobata*
505404



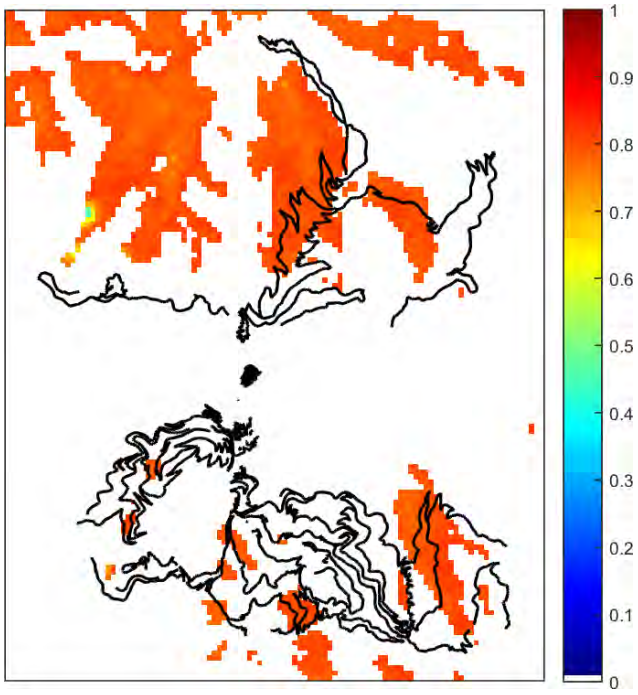
Toothed Leionema
Leionema bilobum subsp. *serrulatum*
505480



White Star-bush
Asterolasia asteriscophora subsp. *albiflora*
505647



Wavy Fork-moss
Dicranoloma platycaulon
506754



Appendix 2 Potential offset site Ensym outputs

Scenario test – native vegetation offset

This report provides information about a potential native vegetation offset site for internal testing of different proposals to protect native vegetation. **This report IS NOT a Native vegetation offset report.** A report must be obtained from the Department of Environment, Land, Water and Planning (DELWP).

Date of issue: 06/09/2021
Time of issue: 10:20 am

Report ID: Scenario Testing

Project ID	B33805_Site_1_VegeGain_GDA94_VicGrid_20210906
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Extent of proposed offset site

Total extent	80.981 ha
Patches	80.981 ha
Revegetation	0.000 ha
Scattered tree(s)	0.000 ha

Habitat units of gain for the proposed offset site

The offset site has the following total general and species habitat units. These units can be used to satisfy a **single permit condition** or if the offset site is established as a **first party offset site**.

Total habitat units and attributes used for a single permit (once off use)

Number of large tree(s)	Nil large trees are protected at the offset site
General habitat units	17.776 general habitat units Port Phillip And Westernport CMA, Yarra Ranges Shire Council 0.756 Strategic biodiversity value
Species habitat units	17.192 species habitat units for Mountain Bird-orchid, <i>Chiloglottis jeansii</i> 18.381 species habitat units for Grey Goshawk, <i>Accipiter novaehollandiae novaehollandiae</i> 18.648 species habitat units for Powerful Owl, <i>Ninox strenua</i> 18.674 species habitat units for Sooty Owl, <i>Tyto tenebricosa tenebricosa</i> 19.424 species habitat units for Greater Glider, <i>Petauroides volans</i> 20.245 species habitat units for Leadbeater's Possum, <i>Gymnobelideus leadbeateri</i> 16.615 species habitat units for Smoky Mouse, <i>Pseudomys fumeus</i> 18.091 species habitat units for Tall Astelia, <i>Astelia australiana</i> 18.095 species habitat units for Forest Sedge, <i>Carex alsophila</i> 18.092 species habitat units for Slender Tree-fern, <i>Cyathea cunninghamii</i> 18.095 species habitat units for Brickmaker's Sedge, <i>Gahnia grandis</i> 18.095 species habitat units for Nunniong Everlasting, <i>Ozothamnus rogersianus</i> 18.095 species habitat units for Tufted Club-sedge, <i>Isolepis wakefieldiana</i>

Scenario test – native vegetation offset

18.086 species habitat units for Bristly Shield-fern, <i>Lastreopsis hispida</i>
18.095 species habitat units for Lacy Wedge-fern, <i>Lindsaea microphylla</i>
18.094 species habitat units for Jungle Bristle-fern, <i>Cephalomanes caudatum</i>
18.096 species habitat units for Varied Mitrewort, <i>Mitrasacme polymorpha</i>
18.093 species habitat units for Tree Geebung, <i>Persoonia arborea</i>
18.098 species habitat units for Round-leaf Pomaderris, <i>Pomaderris vacciniifolia</i>
18.095 species habitat units for Long Pink-bells, <i>Tetratheca stenocarpa</i>
18.095 species habitat units for Leafless Pink-bells, <i>Tetratheca subaphylla</i>
18.066 species habitat units for Fairy Lanterns, <i>Thismia rodwayi</i>
18.095 species habitat units for Oval Fork-fern, <i>Tmesipteris ovata</i>
18.095 species habitat units for Small Fork-fern, <i>Tmesipteris parva</i>
18.048 species habitat units for Beech Finger-fern, <i>Notogrammitis angustifolia</i> subsp. <i>nothofagei</i>
18.095 species habitat units for Silky Golden-tip, <i>Goodia pubescens</i>
18.095 species habitat units for Forest Phebalium, <i>Phebalium squamulosum</i> subsp. <i>squamulosum</i>
16.799 species habitat units for Veined Spear-grass, <i>Austrostipa rudis</i> subsp. <i>australis</i>
18.095 species habitat units for Large-leaf Cinnamon-wattle, <i>Acacia leprosa</i> var. <i>uninervia</i>
18.095 species habitat units for Powelltown Correa, <i>Correa reflexa</i> var. <i>lobata</i>
18.095 species habitat units for Toothed Leionema, <i>Leionema bilobum</i> subsp. <i>serrulatum</i>
17.157 species habitat units for Brown's Mitre-moss, <i>Calyptrochaeta brownii</i>
18.095 species habitat units for Tremont Bundy, <i>Eucalyptus</i> aff. <i>goniocalyx</i> (Dandenong Ranges)
17.970 species habitat units for Floodplain Fireweed, <i>Senecio campylocarpus</i>

Scenario test – native vegetation offset

This report provides information about a potential native vegetation offset site for internal testing of different proposals to protect native vegetation. **This report IS NOT a Native vegetation offset report.** A report must be obtained from the Department of Environment, Land, Water and Planning (DELWP).

Date of issue: 06/09/2021
Time of issue: 10:41 am

Report ID: Scenario Testing

Project ID B33805_Site_2_VegeGain_GDA94_VicGrid_20210906

Extent of proposed offset site

Total extent	229.372 ha
Patches	229.372 ha
Revegetation	0.000 ha
Scattered tree(s)	0.000 ha

Habitat units of gain for the proposed offset site

The offset site has the following total general and species habitat units. These units can be used to satisfy a **single permit condition** or if the offset site is established as a **first party offset site**.

Total habitat units and attributes used for a single permit (once off use)

Number of large tree(s)	Nil large trees are protected at the offset site
General habitat units	39.203 general habitat units Port Phillip And Westernport CMA, Yarra Ranges Shire Council 0.709 Strategic biodiversity value
Species habitat units	41.511 species habitat units for Grey Goshawk, <i>Accipiter novaehollandiae novaehollandiae</i> 42.111 species habitat units for Powerful Owl, <i>Ninox strenua</i> 42.200 species habitat units for Sooty Owl, <i>Tyto tenebricosa tenebricosa</i> 42.674 species habitat units for White-throated Needle-tail, <i>Hirundapus caudacutus</i> 37.123 species habitat units for Spot-tailed Quoll, <i>Dasyurus maculatus maculatus</i> 43.712 species habitat units for Greater Glider, <i>Petauroides volans</i> 45.874 species habitat units for Leadbeater's Possum, <i>Gymnobelideus leadbeateri</i> 35.620 species habitat units for Eastern Horseshoe Bat, <i>Rhinolophus megaphyllus megaphyllus</i> 38.668 species habitat units for Smoky Mouse, <i>Pseudomys fumeus</i> 40.140 species habitat units for Lace Monitor, <i>Varanus varius</i> 40.103 species habitat units for Australian Grayling, <i>Prototroctes maraena</i> 40.749 species habitat units for Tall Astelia, <i>Astelia australiana</i>

Scenario test – native vegetation offset

40.717 species habitat units for Forest Sedge, <i>Carex alsophila</i>
39.590 species habitat units for Slender Tree-fern, <i>Cyathea cunninghamii</i>
40.697 species habitat units for Brickmaker's Sedge, <i>Gahnia grandis</i>
40.728 species habitat units for Nunniong Everlasting, <i>Ozothamnus rogersianus</i>
40.729 species habitat units for Tufted Club-sedge, <i>Isolepis wakefieldiana</i>
39.552 species habitat units for Bristly Shield-fern, <i>Lastreopsis hispida</i>
40.729 species habitat units for Lacy Wedge-fern, <i>Lindsaea microphylla</i>
39.633 species habitat units for Jungle Bristle-fern, <i>Cephalomanes caudatum</i>
40.769 species habitat units for Varied Mitrewort, <i>Mitrasacme polymorpha</i>
40.796 species habitat units for Tree Geebung, <i>Persoonia arborea</i>
40.655 species habitat units for Round-leaf Pomaderris, <i>Pomaderris vacciniifolia</i>
40.729 species habitat units for Long Pink-bells, <i>Tetratheca stenocarpa</i>
40.729 species habitat units for Leafless Pink-bells, <i>Tetratheca subaphylla</i>
38.275 species habitat units for Fairy Lanterns, <i>Thismia rodwayi</i>
40.694 species habitat units for Oval Fork-fern, <i>Tmesipteris ovata</i>
40.704 species habitat units for Small Fork-fern, <i>Tmesipteris parva</i>
40.693 species habitat units for Beech Finger-fern, <i>Notogrammitis angustifolia</i> subsp. <i>nothofagei</i>
36.959 species habitat units for Mountain Bird-orchid, <i>Chiloglottis jeansii</i>
40.729 species habitat units for Silky Golden-tip, <i>Goodia pubescens</i>
40.729 species habitat units for Forest Phebalium, <i>Phebalium squamulosum</i> subsp. <i>squamulosum</i>
36.124 species habitat units for Veined Spear-grass, <i>Austrostipa rudis</i> subsp. <i>australis</i>
40.728 species habitat units for Large-leaf Cinnamon-wattle, <i>Acacia leprosa</i> var. <i>uninervia</i>
37.724 species habitat units for Green Scentbark, <i>Eucalyptus fulgens</i>
40.719 species habitat units for Powelltown Correa, <i>Correa reflexa</i> var. <i>lobata</i>
40.712 species habitat units for Toothed Leonema, <i>Leonema bilobum</i> subsp. <i>serrulatum</i>
37.887 species habitat units for White Star-bush, <i>Asterolasia asteriscophora</i> subsp. <i>albiflora</i>
1.265 species habitat units for Grey Pouchwort, <i>Acrobolbus cinerascens</i>
37.186 species habitat units for Brown's Mitre-moss, <i>Calyptrochaeta brownii</i>
38.202 species habitat units for Wavy Fork-moss, <i>Dicranoloma platycaulon</i>
40.729 species habitat units for Tremont Bundy, <i>Eucalyptus</i> aff. <i>goniocalyx</i> (Dandenong Ranges)
39.873 species habitat units for Distal-lobe Fireweed, <i>Senecio distalilobatus</i>
40.689 species habitat units for Floodplain Fireweed, <i>Senecio campylocarpus</i>

Scenario test – native vegetation offset

This report provides information about a potential native vegetation offset site for internal testing of different proposals to protect native vegetation. **This report IS NOT a Native vegetation offset report.** A report must be obtained from the Department of Environment, Land, Water and Planning (DELWP).

Date of issue: 06/09/2021
Time of issue: 10:40 am

Report ID: Scenario Testing

Project ID	B33805_Site_6_VegeGain_GDA94_VicGrid_20210906
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Extent of proposed offset site

Total extent	209.800 ha
Patches	209.800 ha
Revegetation	0.000 ha
Scattered tree(s)	0.000 ha

Habitat units of gain for the proposed offset site

The offset site has the following total general and species habitat units. These units can be used to satisfy a **single permit condition** or if the offset site is established as a **first party offset site**.

Total habitat units and attributes used for a single permit (once off use)

Number of large tree(s)	Nil large trees are protected at the offset site
General habitat units	36.331 general habitat units Port Phillip And Westernport CMA, Yarra Ranges Shire Council 0.732 Strategic biodiversity value
Species habitat units	38.032 species habitat units for White Star-bush, <i>Asterolasia asteriscophora subsp. albiflora</i> 37.897 species habitat units for Wavy Fork-moss, <i>Dicranoloma platycaulon</i> 38.221 species habitat units for Grey Goshawk, <i>Accipiter novaehollandiae novaehollandiae</i> 39.015 species habitat units for Powerful Owl, <i>Ninox strenua</i> 38.808 species habitat units for Sooty Owl, <i>Tyto tenebricosa tenebricosa</i> 39.031 species habitat units for White-throated Needletail, <i>Hirundapus caudacutus</i> 35.285 species habitat units for Spot-tailed Quoll, <i>Dasyurus maculatus maculatus</i> 40.030 species habitat units for Greater Glider, <i>Petauroides volans</i> 41.960 species habitat units for Leadbeater's Possum, <i>Gymnobelideus leadbeateri</i> 37.935 species habitat units for Smoky Mouse, <i>Pseudomys fumeus</i> 38.650 species habitat units for Lace Monitor, <i>Varanus varius</i> 40.656 species habitat units for Australian Grayling, <i>Prototroctes maraena</i>

Scenario test – native vegetation offset

37.659 species habitat units for Tall Astelia, <i>Astelia australiana</i>
37.828 species habitat units for Forest Sedge, <i>Carex alsophila</i>
37.750 species habitat units for Slender Tree-fern, <i>Cyathea cunninghamii</i>
37.828 species habitat units for Brickmaker's Sedge, <i>Gahnia grandis</i>
37.828 species habitat units for Nunniong Everlasting, <i>Ozothamnus rogersianus</i>
37.828 species habitat units for Tufted Club-sedge, <i>Isolepis wakefieldiana</i>
35.994 species habitat units for Errinundra Shining Gum, <i>Eucalyptus denticulata</i>
37.572 species habitat units for Bristly Shield-fern, <i>Lastreopsis hispida</i>
37.828 species habitat units for Lacy Wedge-fern, <i>Lindsaea microphylla</i>
37.712 species habitat units for Jungle Bristle-fern, <i>Cephalomanes caudatum</i>
37.811 species habitat units for Varied Mitrewort, <i>Mitrasacme polymorpha</i>
37.758 species habitat units for Tree Geebung, <i>Persoonia arborea</i>
37.828 species habitat units for Round-leaf Pomaderris, <i>Pomaderris vacciniifolia</i>
37.828 species habitat units for Long Pink-bells, <i>Tetratheca stenocarpa</i>
37.828 species habitat units for Leafless Pink-bells, <i>Tetratheca subaphylla</i>
37.516 species habitat units for Fairy Lanterns, <i>Thismia rodwayi</i>
37.828 species habitat units for Oval Fork-fern, <i>Tmesipteris ovata</i>
37.828 species habitat units for Small Fork-fern, <i>Tmesipteris parva</i>
37.651 species habitat units for Beech Finger-fern, <i>Notogrammitis angustifolia</i> subsp. <i>nothofagei</i>
37.197 species habitat units for Mountain Bird-orchid, <i>Chiloglottis jeansesii</i>
37.828 species habitat units for Silky Golden-tip, <i>Goodia pubescens</i>
37.828 species habitat units for Forest Phebalium, <i>Phebalium squamulosum</i> subsp. <i>squamulosum</i>
37.012 species habitat units for Veined Spear-grass, <i>Austrostipa rudis</i> subsp. <i>australis</i>
37.828 species habitat units for Large-leaf Cinnamon-wattle, <i>Acacia leprosa</i> var. <i>uninervia</i>
37.088 species habitat units for Green Scentbark, <i>Eucalyptus fulgens</i>
37.828 species habitat units for Powelltown Correa, <i>Correa reflexa</i> var. <i>lobata</i>
37.826 species habitat units for Toothed Leonema, <i>Leonema bilobum</i> subsp. <i>serrulatum</i>
36.865 species habitat units for Brown's Mitre-moss, <i>Calyptrochaeta brownii</i>
37.828 species habitat units for Tremont Bundy, <i>Eucalyptus</i> aff. <i>goniocalyx</i> (Dandenong Ranges)
37.866 species habitat units for Distal-lobe Fireweed, <i>Senecio distallobatus</i>
37.882 species habitat units for Floodplain Fireweed, <i>Senecio campylocarpus</i>

Scenario test – native vegetation offset

This report provides information about a potential native vegetation offset site for internal testing of different proposals to protect native vegetation. **This report IS NOT a Native vegetation offset report.** A report must be obtained from the Department of Environment, Land, Water and Planning (DELWP).

Date of issue: 06/09/2021
Time of issue: 11:01 am

Report ID: Scenario Testing

Project ID	B33805_Site_7_VegeGain_GDA94_VicGrid_20210906
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Extent of proposed offset site

Total extent	161.204 ha
Patches	161.204 ha
Revegetation	0.000 ha
Scattered tree(s)	0.000 ha

Habitat units of gain for the proposed offset site

The offset site has the following total general and species habitat units. These units can be used to satisfy a **single permit condition** or if the offset site is established as a **first party offset site**.

Total habitat units and attributes used for a single permit (once off use)

Number of large tree(s)	Nil large trees are protected at the offset site
General habitat units	27.921 general habitat units Port Phillip And Westernport CMA, Yarra Ranges Shire Council 0.732 Strategic biodiversity value
Species habitat units	22.056 species habitat units for Mountain Bird-orchid, <i>Chiloglottis jeanesii</i> 29.063 species habitat units for White Star-bush, <i>Asterolasia asteriscophora subsp. albiflora</i> 30.006 species habitat units for Grey Goshawk, <i>Accipiter novaehollandiae novaehollandiae</i> 30.170 species habitat units for Powerful Owl, <i>Ninox strenua</i> 29.631 species habitat units for Sooty Owl, <i>Tyto tenebricosa tenebricosa</i> 29.986 species habitat units for White-throated Needle-tail, <i>Hirundapus caudacutus</i> 27.012 species habitat units for Spot-tailed Quoll, <i>Dasyurus maculatus maculatus</i> 30.254 species habitat units for Greater Glider, <i>Petauroides volans</i> 31.841 species habitat units for Leadbeater's Possum, <i>Gymnobelideus leadbeateri</i> 27.094 species habitat units for Eastern Horseshoe Bat, <i>Rhinolophus megaphyllus megaphyllus</i> 27.938 species habitat units for Smoky Mouse, <i>Pseudomys fumeus</i> 29.964 species habitat units for Lace Monitor, <i>Varanus varius</i>

Scenario test – native vegetation offset

11.206 species habitat units for Australian Grayling, *Prototroctes maraena*
29.069 species habitat units for Tall Astelia, *Astelia australiana*
29.091 species habitat units for Forest Sedge, *Carex alsophila*
29.071 species habitat units for Slender Tree-fern, *Cyathea cunninghamii*
29.100 species habitat units for Brickmaker's Sedge, *Gahnia grandis*
29.105 species habitat units for Nunniong Everlasting, *Ozothamnus rogersianus*
29.101 species habitat units for Tufted Club-sedge, *Isolepis wakefieldiana*
23.486 species habitat units for Bristly Shield-fern, *Lastreopsis hispida*
29.101 species habitat units for Lacy Wedge-fern, *Lindsaea microphylla*
29.081 species habitat units for Jungle Bristle-fern, *Cephalomanes caudatum*
29.099 species habitat units for Varied Mitrewort, *Mitrasacme polymorpha*
28.726 species habitat units for Tree Geebung, *Persoonia arborea*
29.101 species habitat units for Round-leaf Pomaderris, *Pomaderris vacciniifolia*
29.101 species habitat units for Long Pink-bells, *Tetratheca stenocarpa*
29.099 species habitat units for Leafless Pink-bells, *Tetratheca subaphylla*
29.094 species habitat units for Fairy Lanterns, *Thismia rodwayi*
29.096 species habitat units for Oval Fork-fern, *Tmesipteris ovata*
29.095 species habitat units for Small Fork-fern, *Tmesipteris parva*
24.535 species habitat units for Beech Finger-fern, *Notogrammitis angustifolia* subsp. *nothofagei*
29.101 species habitat units for Silky Golden-tip, *Goodia pubescens*
29.101 species habitat units for Forest Phebalium, *Phebalium squamulosum* subsp. *squamulosum*
29.101 species habitat units for Large-leaf Cinnamon-wattle, *Acacia leprosa* var. *uninervia*
28.170 species habitat units for Green Scentbark, *Eucalyptus fulgens*
29.101 species habitat units for Powelltown Correa, *Correa reflexa* var. *lobata*
29.070 species habitat units for Toothed Leonema, *Leonema bilobum* subsp. *serrulatum*
29.101 species habitat units for Tremont Bundy, *Eucalyptus* aff. *goniocalyx* (Dandenong Ranges)

Scenario test – native vegetation offset

This report provides information about a potential native vegetation offset site for internal testing of different proposals to protect native vegetation. **This report IS NOT a Native vegetation offset report.** A report must be obtained from the Department of Environment, Land, Water and Planning (DELWP).

Date of issue: 06/09/2021

Report ID: Scenario Testing

Time of issue: 1:08 pm

Project ID	B33805_Site_9_VegeGain_GDA94_VicGrid_20210906
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Extent of proposed offset site

Total extent	2733.850 ha
Patches	2733.850 ha
Revegetation	0.000 ha
Scattered tree(s)	0.000 ha

Habitat units of gain for the proposed offset site

The offset site has the following total general and species habitat units. These units can be used to satisfy a **single permit condition** or if the offset site is established as a **first party offset site**.

Total habitat units and attributes used for a single permit (once off use)

Number of large tree(s)	Nil large trees are protected at the offset site
General habitat units	488.107 general habitat units Port Phillip And Westernport CMA, West Gippsland CMA, Yarra Ranges Shire Council 0.785 Strategic biodiversity value
Species habitat units	493.874 species habitat units for Tall Astelia, <i>Astelia australiana</i> 493.707 species habitat units for Brickmaker's Sedge, <i>Gahnia grandis</i> 249.141 species habitat units for Gully Grevillea, <i>Grevillea barklyana</i> 485.314 species habitat units for Bristly Shield-fern, <i>Lastreopsis hispidia</i> 493.707 species habitat units for Long Pink-bells, <i>Tetratheca stenocarpa</i> 483.269 species habitat units for Beech Finger-fern, <i>Notogrammitis angustifolia subsp. nothofagei</i> 488.040 species habitat units for Mountain Bird-orchid, <i>Chiloglottis jeansesii</i> 493.775 species habitat units for Toothed Leionema, <i>Leionema bilobum subsp. serrulatum</i> 449.522 species habitat units for White Star-bush, <i>Asterolasia asteriscophora subsp. albiflora</i> 389.182 species habitat units for Wavy Fork-moss, <i>Dicranoloma platycaulon</i> 507.622 species habitat units for Grey Goshawk, <i>Accipiter novaehollandiae novaehollandiae</i>

Scenario test – native vegetation offset

393.443 species habitat units for Square-tailed Kite, <i>Lophoictinia isura</i>
505.766 species habitat units for Powerful Owl, <i>Ninox strenua</i>
249.354 species habitat units for Masked Owl, <i>Tyto novaehollandiae novaehollandiae</i>
499.380 species habitat units for Sooty Owl, <i>Tyto tenebricosa tenebricosa</i>
503.163 species habitat units for White-throated Needletail, <i>Hirundapus caudacutus</i>
442.414 species habitat units for Spot-tailed Quoll, <i>Dasyurus maculatus maculatus</i>
519.848 species habitat units for Greater Glider, <i>Petauroides volans</i>
537.111 species habitat units for Leadbeater's Possum, <i>Gymnobelideus leadbeateri</i>
406.584 species habitat units for Eastern Horseshoe Bat, <i>Rhinolophus megaphyllus megaphyllus</i>
471.662 species habitat units for Smoky Mouse, <i>Pseudomys fumeus</i>
503.887 species habitat units for Lace Monitor, <i>Varanus varius</i>
336.823 species habitat units for Australian Grayling, <i>Prototroctes maraena</i>
418.199 species habitat units for Mountain Banksia, <i>Banksia canei</i>
314.071 species habitat units for Wiry Bossiaea, <i>Bossiaea cordigera</i>
493.761 species habitat units for Forest Sedge, <i>Carex alsophila</i>
249.141 species habitat units for Spurred Helmet-orchid, <i>Corybas aconitiflorus</i>
489.648 species habitat units for Slender Tree-fern, <i>Cyathea cunninghamii</i>
493.667 species habitat units for Nunniong Everlasting, <i>Ozothamnus rogersianus</i>
493.707 species habitat units for Tufted Club-sedge, <i>Isolepis wakefieldiana</i>
416.243 species habitat units for Errinundra Shining Gum, <i>Eucalyptus denticulata</i>
493.707 species habitat units for Lacy Wedge-fern, <i>Lindsaea microphylla</i>
493.715 species habitat units for Jungle Bristle-fern, <i>Cephalomanes caudatum</i>
493.694 species habitat units for Varied Mitrewort, <i>Mitrasacme polymorpha</i>
0.021 species habitat units for Entire Marshwort, <i>Nymphoides montana</i>
249.152 species habitat units for Rough Daisy-bush, <i>Olearia asterotricha</i>
488.728 species habitat units for Tree Geebung, <i>Persoonia arborea</i>
493.662 species habitat units for Round-leaf Pomaderris, <i>Pomaderris vacciniifolia</i>
493.703 species habitat units for Leafless Pink-bells, <i>Tetratheca subaphylla</i>
471.215 species habitat units for Fairy Lanterns, <i>Thismia rodwayi</i>
493.705 species habitat units for Oval Fork-fern, <i>Tmesipteris ovata</i>
493.703 species habitat units for Small Fork-fern, <i>Tmesipteris parva</i>
146.603 species habitat units for Alpine Westringia, <i>Westringia senifolia</i>
321.647 species habitat units for Parsley Xanthosia, <i>Xanthosia leiophylla</i>
493.668 species habitat units for Silky Golden-tip, <i>Goodia pubescens</i>
222.516 species habitat units for Swamp Fireweed, <i>Senecio psilocarpus</i>
493.698 species habitat units for Forest Phebalium, <i>Phebalium squamulosum subsp. squamulosum</i>
347.073 species habitat units for Veined Spear-grass, <i>Austrostipa rudis subsp. australis</i>
493.698 species habitat units for Large-leaf Cinnamon-wattle, <i>Acacia leprosa var. uninervia</i>
446.197 species habitat units for Green Scentbark, <i>Eucalyptus fulgens</i>
74.817 species habitat units for Grey Scentbark, <i>Eucalyptus ignorabilis s.s.</i>
493.707 species habitat units for Powelltown Correa, <i>Correa reflexa var. lobata</i>
468.913 species habitat units for Brown's Mitre-moss, <i>Calyptrochaeta brownii</i>
493.698 species habitat units for Tremont Bundy, <i>Eucalyptus aff. goniocalyx (Dandenong Ranges)</i>
437.893 species habitat units for Distal-lobe Fireweed, <i>Senecio distalilobatus</i>

Scenario test – native vegetation offset

	466.513 species habitat units for Floodplain Fireweed, <i>Senecio campylocarpus</i>
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Scenario test – native vegetation offset

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Date of issue: 06/09/2021

Report ID: Scenario Testing

Time of issue: 10:54 am

Project ID	B33805_Site_11_VegeGain_GDA94_VicGrid_20210906
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Extent of proposed offset site

Total extent	363.410 ha
Patches	363.410 ha
Revegetation	0.000 ha
Scattered tree(s)	0.000 ha

Habitat units of gain for the proposed offset site

The offset site has the following total general and species habitat units. These units can be used to satisfy a **single permit condition** or if the offset site is established as a **first party offset site**.

Total habitat units and attributes used for a single permit (once off use)

Number of large tree(s)	Nil large trees are protected at the offset site
General habitat units	63.793 general habitat units Port Phillip And Westernport CMA, Yarra Ranges Shire Council 0.755 Strategic biodiversity value
Species habitat units	65.279 species habitat units for Mountain Bird-orchid, <i>Chiloglottis jeanesii</i> 68.399 species habitat units for Grey Goshawk, <i>Accipiter novaehollandiae novaehollandiae</i> 59.651 species habitat units for Square-tailed Kite, <i>Lophoictinia isura</i> 67.354 species habitat units for Powerful Owl, <i>Ninox strenua</i> 65.395 species habitat units for Sooty Owl, <i>Tyto tenebricosa tenebricosa</i> 66.774 species habitat units for White-throated Needletail, <i>Hirundapus caudacutus</i> 59.814 species habitat units for Spot-tailed Quoll, <i>Dasyurus maculatus maculatus</i> 69.313 species habitat units for Greater Glider, <i>Petauroides volans</i> 72.682 species habitat units for Leadbeater's Possum, <i>Gymnobelideus leadbeateri</i> 58.409 species habitat units for Eastern Horseshoe Bat, <i>Rhinolophus megaphyllus megaphyllus</i> 63.528 species habitat units for Smoky Mouse, <i>Pseudomys fumeus</i> 67.371 species habitat units for Lace Monitor, <i>Varanus varius</i>

Scenario test – native vegetation offset

65.411 species habitat units for Tall Astelia, <i>Astelia australiana</i>
65.410 species habitat units for Forest Sedge, <i>Carex alsophila</i>
65.399 species habitat units for Slender Tree-fern, <i>Cyathea cunninghamii</i>
65.410 species habitat units for Brickmaker's Sedge, <i>Gahnia grandis</i>
65.411 species habitat units for Nunniong Everlasting, <i>Ozothamnus rogersianus</i>
65.410 species habitat units for Tufted Club-sedge, <i>Isolepis wakefieldiana</i>
65.387 species habitat units for Bristly Shield-fern, <i>Lastreopsis hispida</i>
65.410 species habitat units for Lacy Wedge-fern, <i>Lindsaea microphylla</i>
65.410 species habitat units for Jungle Bristle-fern, <i>Cephalomanes caudatum</i>
65.410 species habitat units for Varied Mitrewort, <i>Mitrasacme polymorpha</i>
65.410 species habitat units for Tree Geebung, <i>Persoonia arborea</i>
65.410 species habitat units for Round-leaf Pomaderris, <i>Pomaderris vacciniifolia</i>
65.410 species habitat units for Long Pink-bells, <i>Tetradthea stenocarpa</i>
65.410 species habitat units for Leafless Pink-bells, <i>Tetradthea subaphylla</i>
65.367 species habitat units for Fairy Lanterns, <i>Thismia rodwayi</i>
65.410 species habitat units for Oval Fork-fern, <i>Tmesipteris ovata</i>
65.410 species habitat units for Small Fork-fern, <i>Tmesipteris parva</i>
65.398 species habitat units for Beech Finger-fern, <i>Notogrammitis angustifolia</i> subsp. <i>nothofagei</i>
65.410 species habitat units for Silky Golden-tip, <i>Goodia pubescens</i>
65.410 species habitat units for Forest Phebalium, <i>Phebalium squamulosum</i> subsp. <i>squamulosum</i>
65.316 species habitat units for Veined Spear-grass, <i>Austrostipa rudis</i> subsp. <i>australis</i>
65.410 species habitat units for Large-leaf Cinnamon-wattle, <i>Acacia leprosa</i> var. <i>uninervia</i>
48.048 species habitat units for Green Scentbark, <i>Eucalyptus fulgens</i>
65.410 species habitat units for Powelltown Correa, <i>Correa reflexa</i> var. <i>lobata</i>
65.410 species habitat units for Toothed Leionema, <i>Leionema bilobum</i> subsp. <i>serrulatum</i>
48.062 species habitat units for White Star-bush, <i>Asterolasia asteriscophora</i> subsp. <i>albiflora</i>
57.025 species habitat units for Brown's Mitre-moss, <i>Calyptrochaeta brownii</i>
57.133 species habitat units for Wavy Fork-moss, <i>Dicranoloma platycaulon</i>
65.410 species habitat units for Tremont Bundy, <i>Eucalyptus</i> aff. <i>goniocalyx</i> (Dandenong Ranges)
65.519 species habitat units for Floodplain Fireweed, <i>Senecio campylocarpus</i>

Scenario test – native vegetation offset

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Date of issue: 06/09/2021

Report ID: Scenario Testing

Time of issue: 11:56 am

Project ID	B33805_Site_12_VegeGain_GDA94_VicGrid_20210906
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Extent of proposed offset site

Total extent	118.325 ha
Patches	118.325 ha
Revegetation	0.000 ha
Scattered tree(s)	0.000 ha

Habitat units of gain for the proposed offset site

The offset site has the following total general and species habitat units. These units can be used to satisfy a **single permit condition** or if the offset site is established as a **first party offset site**.

Total habitat units and attributes used for a single permit (once off use)

Number of large tree(s)	Nil large trees are protected at the offset site
General habitat units	19.902 general habitat units Port Phillip And Westernport CMA, Yarra Ranges Shire Council 0.682 Strategic biodiversity value
Species habitat units	22.238 species habitat units for Grey Goshawk, <i>Accipiter novaehollandiae novaehollandiae</i> 21.919 species habitat units for Powerful Owl, <i>Ninox strenua</i> 21.174 species habitat units for Sooty Owl, <i>Tyto tenebricosa tenebricosa</i> 19.408 species habitat units for Spot-tailed Quoll, <i>Dasyurus maculatus maculatus</i> 22.480 species habitat units for Greater Glider, <i>Petauroides volans</i> 23.460 species habitat units for Leadbeater's Possum, <i>Gymnobelideus leadbeateri</i> 20.273 species habitat units for Smoky Mouse, <i>Pseudomys fumeus</i> 21.896 species habitat units for Lace Monitor, <i>Varanus varius</i> 21.221 species habitat units for Tall Astelia, <i>Astelia australiana</i> 21.221 species habitat units for Forest Sedge, <i>Carex alsophila</i> 21.221 species habitat units for Slender Tree-fern, <i>Cyathea cunninghamii</i> 21.221 species habitat units for Brickmaker's Sedge, <i>Gahnia grandis</i> 21.221 species habitat units for Nunniong Everlasting, <i>Ozothamnus rogersianus</i>

Scenario test – native vegetation offset

21.221 species habitat units for Tufted Club-sedge, <i>Isolepis wakefieldiana</i>
21.235 species habitat units for Bristly Shield-fern, <i>Lastreopsis hispida</i>
21.221 species habitat units for Lacy Wedge-fern, <i>Lindsaea microphylla</i>
21.221 species habitat units for Jungle Bristle-fern, <i>Cephalomanes caudatum</i>
21.221 species habitat units for Varied Mitrewort, <i>Mitrasacme polymorpha</i>
21.225 species habitat units for Tree Geebung, <i>Persoonia arborea</i>
21.221 species habitat units for Round-leaf Pomaderris, <i>Pomaderris vacciniifolia</i>
21.221 species habitat units for Long Pink-bells, <i>Tetratheca stenocarpa</i>
21.221 species habitat units for Leafless Pink-bells, <i>Tetratheca subaphylla</i>
21.227 species habitat units for Fairy Lanterns, <i>Thismia rodwayi</i>
21.221 species habitat units for Oval Fork-fern, <i>Tmesipteris ovata</i>
21.221 species habitat units for Small Fork-fern, <i>Tmesipteris parva</i>
21.046 species habitat units for Beech Finger-fern, <i>Notogrammitis angustifolia</i> subsp. <i>nothofagei</i>
21.332 species habitat units for Mountain Bird-orchid, <i>Chiloglottis jeansii</i>
21.221 species habitat units for Silky Golden-tip, <i>Goodia pubescens</i>
21.221 species habitat units for Forest Phebalium, <i>Phebalium squamulosum</i> subsp. <i>squamulosum</i>
21.221 species habitat units for Large-leaf Cinnamon-wattle, <i>Acacia leprosa</i> var. <i>uninervia</i>
21.191 species habitat units for Green Scentbark, <i>Eucalyptus fulgens</i>
21.221 species habitat units for Powelltown Correa, <i>Correa reflexa</i> var. <i>lobata</i>
21.221 species habitat units for Toothed Leonema, <i>Leonema bilobum</i> subsp. <i>serrulatum</i>
21.206 species habitat units for White Star-bush, <i>Asterolasia asteriscophora</i> subsp. <i>albiflora</i>
21.194 species habitat units for Brown's Mitre-moss, <i>Calyptrochaeta brownii</i>
21.221 species habitat units for Tremont Bundy, <i>Eucalyptus</i> aff. <i>goniocalyx</i> (Dandenong Ranges)

Scenario test – native vegetation offset

This report provides information about a potential native vegetation offset site for internal testing of different proposals to protect native vegetation. **This report IS NOT a Native vegetation offset report.** A report must be obtained from the Department of Environment, Land, Water and Planning (DELWP).

Date of issue: 06/09/2021

Report ID: Scenario Testing

Time of issue: 11:56 am

Project ID	B33805_Site_13_VegeGain_GDA94_VicGrid_20210906
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Extent of proposed offset site

Total extent	28.264 ha
Patches	28.264 ha
Revegetation	0.000 ha
Scattered tree(s)	0.000 ha

Habitat units of gain for the proposed offset site

The offset site has the following total general and species habitat units. These units can be used to satisfy a **single permit condition** or if the offset site is established as a **first party offset site**.

Total habitat units and attributes used for a single permit (once off use)	
Number of large tree(s)	Nil large trees are protected at the offset site
General habitat units	4.666 general habitat units Port Phillip And Westernport CMA, Yarra Ranges Shire Council 0.651 Strategic biodiversity value
Species habitat units	5.080 species habitat units for Mountain Bird-orchid, <i>Chiloglottis jeansii</i> 5.210 species habitat units for Leadbeater's Possum, <i>Gymnobelideus leadbeateri</i> 4.441 species habitat units for Smoky Mouse, <i>Pseudomys fumeus</i> 5.074 species habitat units for Tall Astelia, <i>Astelia australiana</i> 5.074 species habitat units for Forest Sedge, <i>Carex alsophila</i> 5.074 species habitat units for Slender Tree-fern, <i>Cyathea cunninghamii</i> 5.074 species habitat units for Brickmaker's Sedge, <i>Gahnia grandis</i> 5.072 species habitat units for Nunniong Everlasting, <i>Ozothamnus rogersianus</i> 5.074 species habitat units for Tufted Club-sedge, <i>Isolepis wakefieldiana</i> 5.072 species habitat units for Bristly Shield-fern, <i>Lastreopsis hispida</i> 5.074 species habitat units for Lacy Wedge-fern, <i>Lindsaea microphylla</i> 5.074 species habitat units for Jungle Bristle-fern, <i>Cephalomanes caudatum</i> 5.074 species habitat units for Varied Mitrewort, <i>Mitrasacme polymorpha</i>

Scenario test – native vegetation offset

5.071 species habitat units for Tree Geebung, *Persoonia arborea*
5.074 species habitat units for Round-leaf Pomaderris, *Pomaderris vacciniifolia*
5.074 species habitat units for Long Pink-bells, *Tetratheca stenocarpa*
5.074 species habitat units for Leafless Pink-bells, *Tetratheca subaphylla*
5.078 species habitat units for Fairy Lanterns, *Thismia rodwayi*
5.074 species habitat units for Oval Fork-fern, *Tmesipteris ovata*
5.074 species habitat units for Small Fork-fern, *Tmesipteris parva*
4.685 species habitat units for Beech Finger-fern, *Notogrammitis angustifolia* subsp. *nothofagei*
5.074 species habitat units for Silky Golden-tip, *Goodia pubescens*
5.074 species habitat units for Forest Phebalium, *Phebalium squamulosum* subsp. *squamulosum*
5.074 species habitat units for Large-leaf Cinnamon-wattle, *Acacia leprosa* var. *uninervia*
5.064 species habitat units for Green Scentbark, *Eucalyptus fulgens*
5.074 species habitat units for Powelltown Correa, *Correa reflexa* var. *lobata*
5.074 species habitat units for Toothed Leionema, *Leionema bilobum* subsp. *serrulatum*
5.066 species habitat units for White Star-bush, *Asterolasia asteriscophora* subsp. *albiflora*
4.697 species habitat units for Brown's Mitre-moss, *Calypstrochaeta brownii*

Scenario test – native vegetation offset

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Date of issue: 06/09/2021

Report ID: Scenario Testing

Time of issue: 11:12 am

Project ID	B33805_Site_14_VegeGain_GDA94_VicGrid_20210906
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Extent of proposed offset site

Total extent	32.898 ha
Patches	32.898 ha
Revegetation	0.000 ha
Scattered tree(s)	0.000 ha

Habitat units of gain for the proposed offset site

The offset site has the following total general and species habitat units. These units can be used to satisfy a **single permit condition** or if the offset site is established as a **first party offset site**.

Total habitat units and attributes used for a single permit (once off use)

Number of large tree(s)	Nil large trees are protected at the offset site
General habitat units	5.517 general habitat units Port Phillip And Westernport CMA, Yarra Ranges Shire Council 0.677 Strategic biodiversity value
Species habitat units	6.580 species habitat units for Leadbeater's Possum, <i>Gymnobelideus leadbeateri</i> 5.584 species habitat units for Smoky Mouse, <i>Pseudomys fumeus</i> 5.928 species habitat units for Tall Astelia, <i>Astelia australiana</i> 5.928 species habitat units for Forest Sedge, <i>Carex alsophila</i> 5.928 species habitat units for Slender Tree-fern, <i>Cyathea cunninghamii</i> 5.928 species habitat units for Brickmaker's Sedge, <i>Gahnia grandis</i> 5.927 species habitat units for Nunniong Everlasting, <i>Ozothamnus rogersianus</i> 5.928 species habitat units for Tufted Club-sedge, <i>Isolepis wakefieldiana</i> 5.926 species habitat units for Bristly Shield-fern, <i>Lastreopsis hispida</i> 5.928 species habitat units for Lacy Wedge-fern, <i>Lindsaea microphylla</i> 5.928 species habitat units for Jungle Bristle-fern, <i>Cephalomanes caudatum</i> 5.928 species habitat units for Varied Mitrewort, <i>Mitrasacme polymorpha</i> 5.928 species habitat units for Tree Geebung, <i>Persoonia arborea</i>

Scenario test – native vegetation offset

5.928 species habitat units for Round-leaf Pomaderris, *Pomaderris vacciniifolia*
5.928 species habitat units for Long Pink-bells, *Tetratheca stenocarpa*
5.928 species habitat units for Leafless Pink-bells, *Tetratheca subaphylla*
5.930 species habitat units for Fairy Lanterns, *Thismia rodwayi*
5.928 species habitat units for Oval Fork-fern, *Tmesipteris ovata*
5.928 species habitat units for Small Fork-fern, *Tmesipteris parva*
5.929 species habitat units for Beech Finger-fern, *Notogrammitis angustifolia* subsp. *nothofagei*
5.928 species habitat units for Mountain Bird-orchid, *Chiloglottis jeansii*
5.928 species habitat units for Silky Golden-tip, *Goodia pubescens*
5.928 species habitat units for Forest Phebalium, *Phebalium squamulosum* subsp. *squamulosum*
5.928 species habitat units for Large-leaf Cinnamon-wattle, *Acacia leprosa* var. *uninervia*
5.924 species habitat units for Green Scentbark, *Eucalyptus fulgens*
5.928 species habitat units for Powelltown Correa, *Correa reflexa* var. *lobata*
5.928 species habitat units for Toothed Leionema, *Leionema bilobum* subsp. *serrulatum*
5.915 species habitat units for White Star-bush, *Asterolasia asteriscophora* subsp. *albiflora*
5.918 species habitat units for Brown's Mitre-moss, *Calypstrochaeta brownii*

Scenario test – native vegetation offset

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Date of issue: 06/09/2021

Report ID: Scenario Testing

Time of issue: 11:10 am

Project ID	B33805_Site_15_VegeGain_GDA94_VicGrid_20210906
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Extent of proposed offset site

Total extent	61.161 ha
Patches	61.161 ha
Revegetation	0.000 ha
Scattered tree(s)	0.000 ha

Habitat units of gain for the proposed offset site

The offset site has the following total general and species habitat units. These units can be used to satisfy a **single permit condition** or if the offset site is established as a **first party offset site**.

Total habitat units and attributes used for a single permit (once off use)

Number of large tree(s)	Nil large trees are protected at the offset site
General habitat units	10.137 general habitat units Port Phillip And Westernport CMA, Yarra Ranges Shire Council 0.657 Strategic biodiversity value
Species habitat units	11.603 species habitat units for Grey Goshawk, <i>Accipiter novaehollandiae novaehollandiae</i> 10.818 species habitat units for Sooty Owl, <i>Tyto tenebricosa tenebricosa</i> 10.970 species habitat units for Leadbeater's Possum, <i>Gymnobelideus leadbeateri</i> 10.369 species habitat units for Eastern Horseshoe Bat, <i>Rhinolophus megaphyllus megaphyllus</i> 10.207 species habitat units for Smoky Mouse, <i>Pseudomys fumeus</i> 10.991 species habitat units for Tall Astelia, <i>Astelia australiana</i> 10.992 species habitat units for Forest Sedge, <i>Carex alsophila</i> 11.000 species habitat units for Slender Tree-fern, <i>Cyathea cunninghamii</i> 10.992 species habitat units for Brickmaker's Sedge, <i>Gahnia grandis</i> 10.994 species habitat units for Nunniong Everlasting, <i>Ozothamnus rogersianus</i> 10.992 species habitat units for Tufted Club-sedge, <i>Isolepis wakefieldiana</i> 11.008 species habitat units for Bristly Shield-fern, <i>Lastreopsis hispida</i>

Scenario test – native vegetation offset

10.992 species habitat units for Lacy Wedge-fern, *Lindsaea microphylla*
10.992 species habitat units for Jungle Bristle-fern, *Cephalomanes caudatum*
10.992 species habitat units for Varied Mitrewort, *Mitrasacme polymorpha*
10.992 species habitat units for Tree Geebung, *Persoonia arborea*
10.992 species habitat units for Round-leaf Pomaderris, *Pomaderris vacciniifolia*
10.992 species habitat units for Long Pink-bells, *Tetratheca stenocarpa*
10.992 species habitat units for Leafless Pink-bells, *Tetratheca subaphylla*
10.999 species habitat units for Fairy Lanterns, *Thismia rodwayi*
10.992 species habitat units for Oval Fork-fern, *Tmesipteris ovata*
10.992 species habitat units for Small Fork-fern, *Tmesipteris parva*
11.011 species habitat units for Beech Finger-fern, *Notogrammitis angustifolia* subsp. *nothofagei*
9.861 species habitat units for Mountain Bird-orchid, *Chiloglottis jeansii*
10.992 species habitat units for Silky Golden-tip, *Goodia pubescens*
10.992 species habitat units for Forest Phebalium, *Phebalium squamulosum* subsp. *squamulosum*
10.992 species habitat units for Large-leaf Cinnamon-wattle, *Acacia leprosa* var. *uninervia*
10.986 species habitat units for Green Scentbark, *Eucalyptus fulgens*
10.992 species habitat units for Powelltown Correa, *Correa reflexa* var. *lobata*
10.992 species habitat units for Toothed Leionema, *Leionema bilobum* subsp. *serrulatum*
9.856 species habitat units for White Star-bush, *Asterolasia asteriscophora* subsp. *albiflora*
9.878 species habitat units for Brown's Mitre-moss, *Calypstrochaeta brownii*
